Supplementary material for "Identifying Restrictions in the Order of Accumulation of Mutations during Tumor Progression: Effects of Passengers, Evolutionary Models, and Sampling"

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1 Introduction

This is supplementary material to the paper "Identifying Restrictions in the Order of Accumulation of Mutations during Tumor Progression: Effects of Passengers, Evolutionary Models, and Sampling". An additional supplementary file, "best-subsets.pdf", shows the best subsets for the 864 combinations of among-data set variables (that is basically 220 pages worth of tables).

2 Evolutionary models and their simulation

2.1 Evolutionary models

As in the ms., Table 1 summarizes the main parameters of the models used. Below I provided details of the models and values of the parameters used.

The model we will call "Bozic" is based on Bozic *et al.* (2010), one of the first papers to explicitly model both drivers and passengers. When cancer develops (i.e., when drivers accumulate), this is a model that leads to exponential growth. Here I use the second continuous-time version of their model (see p. 5 of their supplementary material): birth rate is constant and equal to 1 and death rate is $d_j = (1-s)^j$, where s is the selection coefficient and j is the number of drivers. I set $s = 0.1$, a value within the range considered in table S1 of the supplementary material in Bozic *et al.* (2010). The mutation rate per gene per unit time, μ, is set to 10^{-6} which leads to each daughter cell having, at the start of the process, a probability of a change in at least one driver of about 10^{-5}, very similar to the value of $u = 3.4 * 10^{-5}$ given in p. 18546 in Bozic *et al.* (2010) and well within the range of values in their table S1. In Bozic *et al.* (2010) "The process is initiated with a single surviving founder cell with one driver mutation." Here, however, the simulation starts from a population without any mutated driver (or any mutated passenger): Tomasetti *et al.* (2013) show that by the time the first driver mutation appears passengers could have accumulated, and in the scenario where the identity of drivers is not know, it is crucial for us to allow for this effect (as it could make separation of drivers and passengers by simple frequency statistics harder). Simulations start with an initial population of size $N = 500$ (although, of course, the population size will be one for the first cell with one driver, as in Bozic *et al.* (2010)). Simulations are stopped when the population reaches a size of 10^9 cell, as in Beerenwinkel *et al.* (2007b), or when 25 years (more precisely, $(1/4) * 25 * 365$ time units) have passed, whichever comes first; if population size does not reach 10^9 cells, that simulation is discarded. Detection size is larger than the one used in Bozic *et al.* (2010), for two reasons: first, Bozic *et al.* (2010) start the process from a cell that already has one driver mutation and, second, we want to give simulations a chance to accumulate, in at least some cases, a large number of drivers to avoid penalizing the graphs with 11 drivers. The 1/4 of the time expression reflects that in Bozic *et al.* (2010) events (birth or death) occur at a rate $1/T$ (see p. 6 of their supplementary material), where $T = 4$ is the number of days between cell divisions. With the above parameters, the number of simulations that reach completion ranges between 9 and 20%, depending on graph and sh (see Table 2).

I also use a second model with exponential growth, and refer to this model as "exp". In this model, death rate is constant and equal to 1, and birth rate, b_j, is $(1+s)^j$, where $s = 0.1$ is the selection coefficient and j is the number of drivers. The expression for b_j is the same as the one used by Datta *et al.* (2013) and Beerenwinkel *et al.* (2007b) (but those authors use a Fisher-Wright model where the relative fitness of a cell depends on the fitness of the rest of the population). Mutation rate is proportional to growth rate, as in several of the models considered in Mather *et al.* (2012), so that fitter clones evolve faster, with a mutation rate per gene per unit time of $\mu = 10^{-7} b_j$, where the 10^{-7} is like the value used in Beerenwinkel *et al.* (2007b), and within the range of values (per division) considered in McFarland *et al.* (2013).

The models denoted "McF_4" and "McF_6" are based on McFarland *et al.* (2013). This is a model that leads to logistic-like behavior, in contrast to the exponential and Bozic models. Here, birth rate, b_j depends on the number of drivers as given by $b_j = (1+s_d)^j$, and death rate increases with population size. In the absence of deleterious passenger effects, this model leads to periods of

Model	Birth rate (b_j)	Death rate (d_j or D_N)	Mutation rate (per gene per unit time)	Cancer reached if
Bozic	1	$(1-s)^j(1+s_h)^p$	10^{-5}	$> 10^9$ cells
exp	$(1+s)^j(1-s_h)^{p\ (+)}$	1	$b_j * 10^{-7}$	$> 10^9$ cells
McF_4	$(1+s)^j/(1+s_h)^p$	$\log(1+N/K)$	$5 * 10^{-7}$	Number of drivers ≥ 4
McF_6	$(1+s)^j/(1+s_h)^p$	$\log(1+N/K)$	$5 * 10^{-7}$	Number of drivers ≥ 6

Supplementary Table 1: Main parameters for each of the tumor progression models. j is the number of drivers with their dependencies met, and p the number of drivers with dependencies not met. In all cases $s = 0.1$. s_h is set to either 0 (so it has no effect) or ∞ (so fitness of that clone is 0). N: population size. $K = 2000$. $^+$ This is really $b_j = \max(0, (1+s)^j(1-s_h)^p)$. This is the same table as provided in the ms.

populations size stasis altered by fast increases in population size that correspond to the acquisition of a driver that sweeps through the population. The original model in McFarland *et al.* (2013) allows for the incorporation of deleterious effects of passenger mutations but here we will assume that passengers neutral (so $s_p = 0$ in their equation 1): this is done for the sake of simplicity and to avoid aliasing strong density dependence with passenger deleterious effects. The model used here uses their second form for death rate, $D = \log(1 + N/K)$, as it allows populations to grow to larger sample sizes. The fitness advantage of a driver, s_d, is set to 0.1, identical to the value used by McFarland *et al.* (2013); this s_d is thus the same as the s of the Bozic model. Mutation rate per gene per unit of time is set to $5 * 10^{-7}$, a value whose magnitude is within the range used in their paper, although larger than their 10 possible activating mutations per gene 10^{-8}: McFarland *et al.* (2013) have a much larger number of potential drivers (70 vs. our maximum of 11), and thus to achieve comparable numbers of mutated drivers in our case, mutation rate should be higher. With our mutation rate mutation rate of $5 * 10^{-7}$, the probability that a daughter cell has one driver mutated is comparable to that of McFarland *et al.* (2013). The model in McFarland *et al.* (2013) only allows mutation events to occur during cell division, whereas in our simulations mutations are not restricted to occur only during division, and the rate is given per unit time; having mutations occur only at division would be extremely cumbersome when using the approach of Mather *et al.* (2012) (see section 2.2) followed here, and having mutations occur at a fixed rate per unit time is also common in other models of tumor progression (e.g., Durrett *et al.*, 2011, 2010). Fortunately, in the original model of McFarland *et al.* (2013) having mutations proportional to unit time, not generation, leads to the same results (C. D. McFarland, pers. comm.). Initial equilibrium population size, K, is set to 2000; this is double the default number used in McFarland *et al.* (2013), but well within the range of values they explored (100-10000; see their Supplementary material); since simulations are fairly expensive, we want to increase the probability of reaching cancer which, as shown by McFarland *et al.* (2013) (see their Figure S3), increases with the initial population size (recall that we discard any simulation that does not reach cancer). Simulations are stopped when the number of drivers in any genotype is larger or equal than a pre-specified threshold. I have used two versions of the model, McF_4, where the threshold is set at four, and McF_6, where the threshold is set at six, in both cases leading to numbers of drivers within the ranges shown in their Table 1. (Simulations under McF_4 could be obtained by running simulations as for McF_6 and discarding all the samples from the time when four drivers are detected; this is, however, computationally wasteful.) The criterion for stopping the simulations does not include population size, since it is really redundant given this model: the population sizes for a given number of drivers can be found by setting $B(d) = D(N)$. In the McF_4 model the average final population size is about 5500 to 5800, a value slightly above that of setting $B(3) = D(N)$, because we stop the simulations at the first sampling period when four drivers have been reached. That corresponds to the period during the driver sweep (see also Figure 2 in McFarland *et al.* (2013)) when the population is in transition from $D(N) = B(3)$ to $D(N) = B(4)$. In the McF_6 model the final average sizes are of about 8100 to 8500 (slightly above

$D(N) = B(5)$). With the above parameters, the number of simulations that reach completion ranges between 70 and 98%, depending on graph and sh (see Table 2).

Supplementary Table 2: Proportion of simulations that result in cancer by Graph, sh, and evolutionary Model.

	Graph	sh	Bozic	exp	McF_4	McF_6
1	11-A	Inf	0.16	0.04	0.95	0.92
2	11-B	Inf	0.14	0.03	0.94	0.90
3	9-A	Inf	0.19	0.04	0.96	0.91
4	9-B	Inf	0.20	0.05	0.98	0.95
5	7-A	Inf	0.10	0.01	0.83	0.72
6	7-B	Inf	0.10	0.02	0.81	0.76
7	11-A	0	0.17	0.04	0.95	0.93
8	11-B	0	0.16	0.04	0.96	0.91
9	9-A	0	0.20	0.04	0.98	0.92
10	9-B	0	0.20	0.06	0.98	0.96
11	7-A	0	0.10	0.01	0.81	0.72
12	7-B	0	0.09	0.02	0.84	0.78

Note that the models used do allow for the presence of clonal interference (e.g., in Graph 7A between two clones, one with mutation in genes 1 and 2, and another with mutations in genes 1 and 3). Regardless, the set of models used here is a relatively limited one (e.g., Korolev *et al.*, 2014) but, as discussed in the ms. the purpose of using several models is not to exhaust the range of plausible models but to examine the impact of some major models in the quality of our inferences about restrictions.

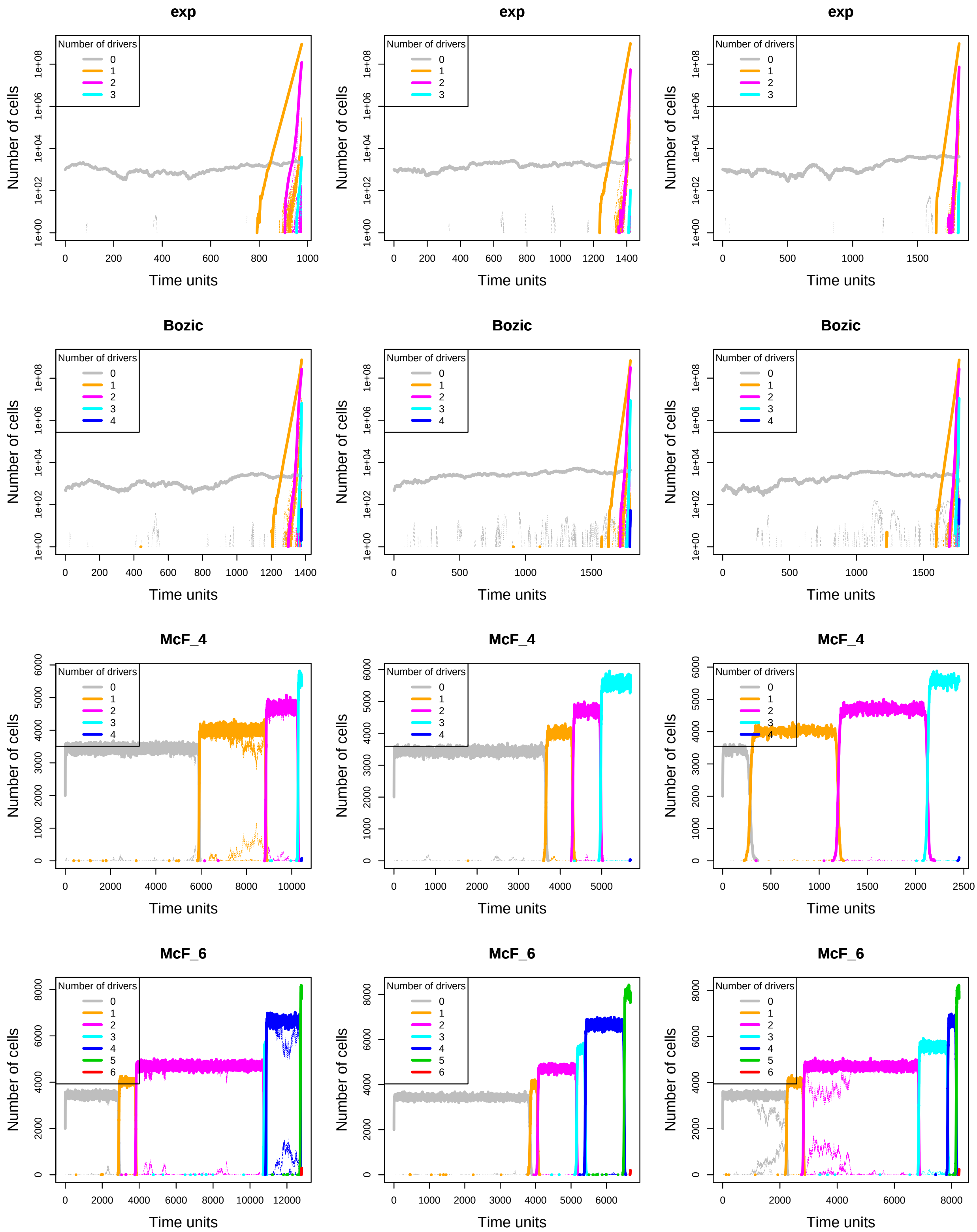
2.2 Simulation

For the simulations, I have used BNB, the fast stochastic algorithm of Mather *et al.* (2012). This method is closely related to the Gillespie algorithm and the next reaction method Gibson and Bruck (2000) (see also Zhu *et al.*, 2011, for an example of modeling a Moran model of cancer development), but can lead to significant speed improvements when mutation rates are much smaller than death and birth rates. Given the very large number of simulations used in this study using a fast procedure was crucial. This algorithm is exact when birth, death, and mutation rates are constant between consecutive mutations, as in the "exp" and "Bozic" models. For the McFarland model (McFarland *et al.*, 2013), where death rate is density dependent, the approach in Mather *et al.* (2012) does not provide an exact simulation, but can be used to provide a very accurate approximation, as discussed in section 2.6 and section E of the supplementary material in Mather *et al.* (2012). This involves updating the system with short enough time increments so that birth, date, and mutation rates can be considered constant between updates. When using the model of McFarland *et al.* (2013), the value that is affected is the death rate through its dependence on the ratio N/K. In the simulations reported here, I update the system every 0.05 time units, so that even during fast driver sweeps, the relative change in death rate between updates remains small (in a set of 2,300,000 random simulations that represent all graphs, the largest absolute change in the death rate between successive updates was 0.027, with a mean of the maxima of 0.016, indicating an accurate approximation as the largest change in death rate between any two updates was less than 3% of any death rate in the simulation). I have implemented the BNB algorithm of Mather *et al.* (2012) so that in step 6 of their Algorithm 5 (see section C.1, p. 5, of their supplementary material), when updating the birth and death parameters, we check if the dependencies specified in the graph of the oncogenetic model are met, and if they are not, they are adjusted according to the setting of s_h, s, p, j (see Table 1). For all models, to determine if stopping criteria are met and to provide

samples for the uniform sampling scheme, the simulation process is sampled every 15 time units. Examples of simulated trajectories for each model are shown in Figure 1, in section 2.3. Since our study needs to examine the effect of passengers on the inference of oncogenetic models, we keep track of individual clones, where a clone is any of the possible combinations of individual passengers and drivers (in contrast to most other simulation methods which only need to keep track of number of drivers or, at most, identity of clones as defined just by driver).

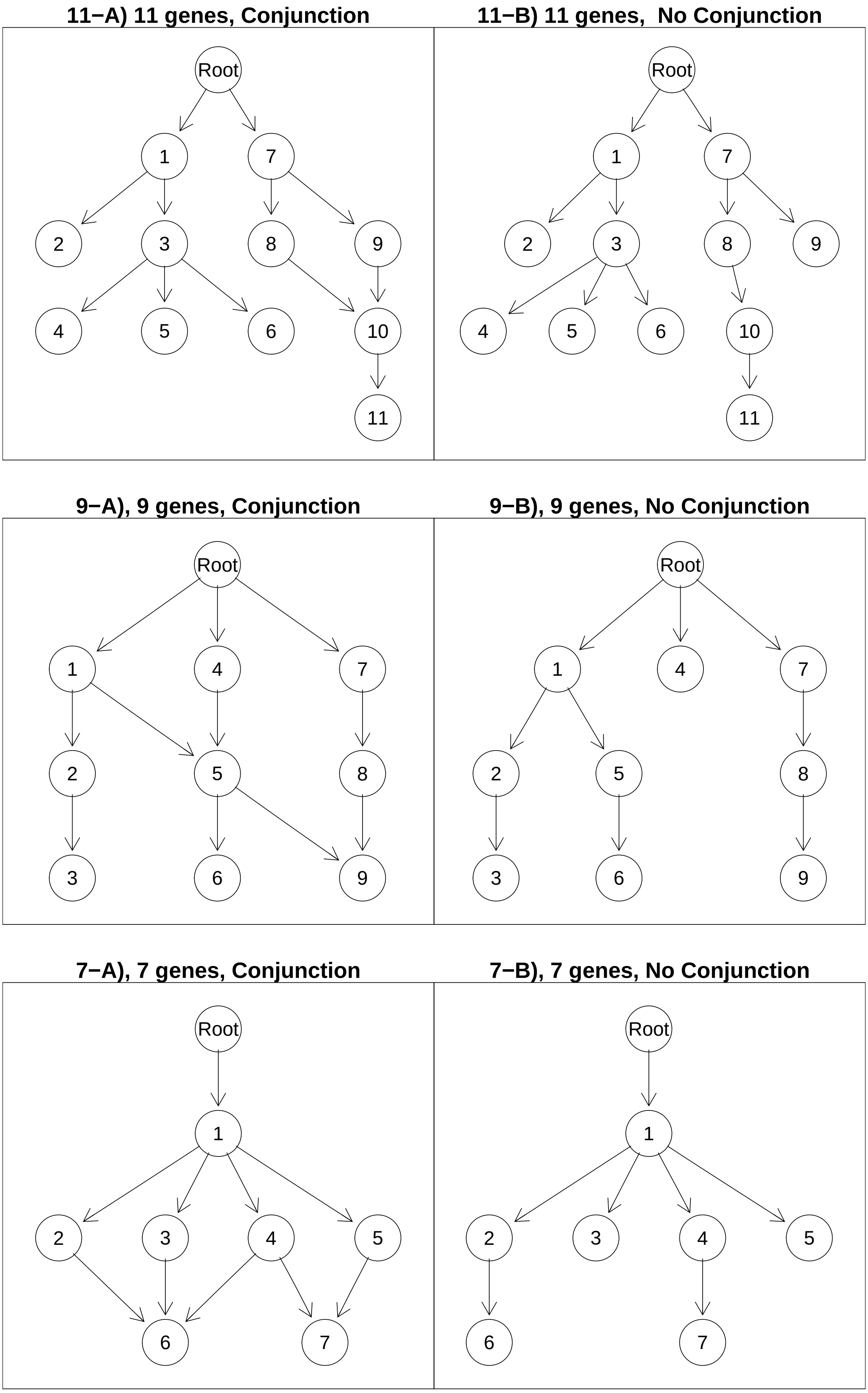
2.3 Examples of simulated cancer progression trajectories

The figures below show simulated trajectories, for simulations that reach cancer, for each of the models used. These figures reproduce the qualitative behavior of original models. Our simulations restrict attention to just a few passengers (50 in the examples shown below), whereas the original models consider many more (5000 in McFarland *et al.* (2013)) which explains the smaller number of different clones compared to, for example, Fig. 2C in McFarland *et al.* (2013).



Supplementary Figure 1: Examples of three randomly chosen simulations that reach cancer for each model, all with graph 11-A and $sh = Inf$. Thick lines are the sum of all clones with the specified number of drivers, whereas thin lines, with dotted line type, show individual clones. For the Bozic and exp models, the y-axis is shown in log scale.

3 Graphs (oncogenetic trees and CBNs) used



Supplementary Figure 2: The six graphs (oncogenetic trees and CBNs) used.

4 Methods and software: CBN/DiP/OT

I used versions 0.3.2 and 0.3.3 of package Oncotree (Szabo and Pappas, 2013), downloaded from CRAN. Tree reconstruction requires no additional parameters with this method. The version of Rtreemix (Bogojeska, 2014) was 1.24.0. The results of Oncotree and Rtreemix were usually identical or very similar (see also plots in section Understanding the different ranking compared to Hainke), but the implementation in package Oncotree incorporates a model for errors due to deviations from the graph of the oncogenetic model model (Szabo and Boucher, 2002) and is focused on single oncogenetic trees (whereas Rtreemix's emphasis are mixtures of trees).

For CBN I used version 0.1.04 of the software available from `http://www.bsse.ethz.ch/cbg/software/ct-cbn` (this is the latest version, as of May 2014, and was also the available one on April 2013). I wrote a wrapper to call their code from R, and I used the same default settings for temp (`-T = 1`) and steps (`-N =` number of nodes^2) and started the simulated annealing search for the best poset from an initial linear poset as in Gerstung *et al.* (2011) (see their code in `example.py`, and their usage of their function `linear_poset`). The number of OpenMP threads of the `h-cbn` program was set to one: I was running as many different simultaneous processes as cores available in the computing cluster, and thus having multiple OpenMP threads would have lead to occasional (and unpredictable) increases in load with increases in total computing time from the cost of context switching (and running fewer processes would not have been compensated from the relatively small gains from the OpenMP parallelism in h-cbn). Some runs took extremely long to run; no run was allowed to run for more than 2 days.

For DiProg I used the code available from `https://bitbucket.org/farahani/diprog`. DiProg currently depends on IBM's ILOG CPLEX optimization library. I used version 12.6 of the library. This library not only is not open source, but has a severely restrictive license (although the authors of DiProg are working on making it work also with open source libraries —H. Farahani, pers. comm.). I obtained the library under the IBM Academic Initiative program. I set the maximum number of threads used by CPLEX to one (for reasons identical to the ones that lead me to use only one OpenMP thread with CBN). I used version 51465b398f9c of DiProg (from May 2014), with a minor fix where I prevented the python code from waiting unnecessarily idle until the maximum time (I removed the calls to function `WatcherThread` and set instead the maximum time directly via `c.parameters.timelimit.set()`, one of ILOG CPLEX parameters). I wrote a wrapper to call the python code from R and I run DiProg with option "MPN" (for monotone progression network —all our conjunctions are of monotone, not semimonotone type, *sensu* Farahani and Lagergren, 2013), examining solutions with $k = 1, 2, 3$ and kept the solution with the best BIC (which, in this case, it is the largest BIC, not the smallest one; see pp. 3 and 5 of Farahani and Lagergren, 2013). Each of the runs for each value of k was limited to use a maximum of 500 seconds and 2GB of RAM, but none of the runs ever got close to the limits (e.g., the maximum time of any run, over the three ks was 78 seconds). The other parameter of DiProg is ε. In Farahani and Lagergren (2013) they suggest comparing reconstructions with different values of ε against some known ground truth, and using the ε that leads to the smallest number of "bad edges" relative to the number of learned edges. It should be noted that this way of choosing ε might not always (or even frequently) be available for many users who are dealing with data for which very little is known. I run the code with two values of ε, 0.05 and 0.2 and the results reported here are those from 0.05, which overall lead to better reconstructions.

5 Measuring performance: Metrics

I measure performance using four different metrics.

Difference between adjacency matrices This is a measure of the difference between the fitted and the true graph. Let A_T and A_F be the adjacency matrices for the true and inferred graphs respectively. Compute $A = A_T - A_F$ as their matrix difference (after, if necessary, adding the corresponding rows and columns filled with zeroes for any nodes present in one matrix and absent in the other). a_{ij} is the entry of A from row i and column j.

We define the difference between adjacency matrices as

$$\sum_i \sum_j |a_{ij}| \tag{1}$$

Note that our measure of dissimilarity is just the square of the "usual" Frobenius norm (Gentle, 2007).This metric is also the same as the "graph edit distance" of Hainke *et al.* (2012) (although the metric in Hainke *et al.*, 2012 is undefined if the number of nodes differs).

This is similar to the score used by Yin *et al.* (2006). In that paper, however, the authors use the maximum absolute row norm (the maximum difference in outgoing edges) of the matrix A and divide that norm by the number of (true) nodes (see their expression for S_{kl} in p. 15 and p. 14 for definition). Here, I use instead the total number of different connections since I want to give a larger score to a graph that misses more connections (even if the largest number of outgoing connections missed does not change). For instance, and referring to graph "11_B" a inferred graph that does not include the connection between nodes 3 and 4, and the connection between nodes 10 and 11, would have missed 2 connections, but a graph that included the connection between 3 and 4 (and not between 10 and 11) would have missed only one connection. The maximum absolute row sum, however, would be the same in both cases.

Note that the adjacency matrices include the root node, as Yin *et al.* (2006) do. This is in contrast to the **PFD**, **PND**, and **FPF** metrics. Finally, I do not scale Diff so that the numbers in the figures can be read directly as number of missed connections.

Proportion of false discoveries, PFD This is a measure of the proportion of false relations returned by a method.

Following Gerstung *et al.* (2009) and Gerstung *et al.* (2011), we define "relations" as the transitive closure of "cover relations" of the posets. For instance suppose a graph with $A \to B \to C$; the cover relations are $A \to B$ and $B \to C$, but we also include $A \to C$ in the relations; this is a biologically reasonable procedure, since C does depend on A (albeit indirectly). As in Gerstung *et al.* (2009) (see their p. 2811) and Gerstung *et al.* (2011), we do not include the root node when finding cover relations and their transitive closure (this is in contrast to what is done in the computation of **Difference between adjacency matrices**).

Now, similar to FPR in Gerstung *et al.* (2009) and Gerstung *et al.* (2011), we define

$$PFD = \frac{\#\text{ of relations in } F \text{ but not in } T}{\#\text{ of relations in } F} \tag{2}$$

where F is the inferred graph and T is the true one.

The numerator is, therefore, the number of **false positives (FP)**. The denominator in our expression is not the same as the one in FPR Gerstung *et al.* (2009) and Gerstung *et al.* (2011). The one we use is easier to interpret directly as just the proportion of false relations out of the total number of relations returned by a method. And, therefore, we can interpret PFD directly as the proportion or fraction of false relations out of the total number of relations returned by a method. PFD as defined here is equivalent to $(1 - precision)$ or $(1 - \text{positive predictive value})$ (Davis and Goadrich, 2006; Pepe, 2003).

Note that the PFD is not defined when no edges are returned by the method (which is the reasonable thing to do, since when no edges are returned, we cannot compute the probability of inferring an incorrect edge). For those familiar with FDR control in multiple testing, this would be similar to the pFDR in Storey (2003) (see his section 6).

Proportion of Negative Discoveries, PND This is a measure of the proportion of relations not discovered. This is the same as FNR in Gerstung *et al.* (2009) and Gerstung *et al.* (2011) and is:

$$PND = \frac{\text{\# of relations in } T \text{ but not in } F}{\text{\# of relations in } T} \tag{3}$$

The numerator is the number of **false negatives (FN)**. PND is equivalent to $1 - \textit{recall}$ or $1 - \textit{sensitivity}$ (Davis and Goadrich, 2006; Pepe, 2003).

False positive fraction, FPF The proportion of falsely detected edges from those edges that are not present: $FPF = \frac{\text{\# of relations in } F \text{ but not in } T}{\text{\# of relations not in } T}$. The numerator is again the number of FP. The relations not in T are computed as follows: for a set of candidate genes of size N, where N in our case is the number of drivers and the number of passengers (which is four times the number of drivers), the total possible cover relations over all possible graphs are $N * (N - 1)$, and we subtract from those the # relations in T. When Drivers are Known, that number is much smaller than when Drivers are Unknown (which explains that the FPFs are larger when Drivers are Known: as in common in document retrieval contexts, the cause is simply that the set of negative cases is much larger than that of positive cases).

Some authors (e.g., Szabo and Boucher, 2008) use, as one of their metrics, the probability of correct reconstruction (i.e., recovering the true graph) . This would not work for us as a general way of ranking methods as the (estimated) probability of correct reconstruction is zero for many combinations of methods and models and would, therefore, not allow us to differentiate between methods that, even if not recovering the exact true graph, have very different behavior in terms of how many edges or relationships they miss.

6 An example of computing best subsets

In Table 21, if we add the numbers over all entries with Conjunction for subset "OT, OT-A" we find 271. This corresponds to the 0.63 ($0.6273 = 271/432$) in Table 4 of the manuscript.

That 271 means that, out of the 432 among-data set level combinations for graphs with Conjunction, in 271 OT and OT-A were the best subset, and in those 271 we had no way of picking OT over OT-A using the Wilcoxon paired-test; but in each of those we were able, based on the Wilcoxon test, to separate them from CBN, CBN-A, DiP and DiP-A. In other words, in each of those 271 cases, OT was better than W other methods and OT-A was also better than exactly W other methods. In this example, of course, W can only take values 1 or 2 or 3 or 4. The value of W could vary among the 271. But, in each of the 271 cases, either both OT and OT-A were significantly better than 4 other methods, or both OT and OT-A were significantly better than 3 other methods, or both OT and OT-A were significantly better than 2 other methods, or both OT and OT-A were significantly better than 1 other method. (Note that this procedure for obtaining the number of methods each method is better than is similar, but not identical, to the one used in pp. 626 and 627 of Hainke *et al.* (2012).)

If we go to file "best-subsets.pdf" we see listed every single one of the 864 comparisons. Now, starting in page 4 of that document, and going all the way to p. 14, we have the set of 432 cases with a graph with conjunction for metric Diff. The first entry, row 1, is for OT, OT-A, and both were better than four other methods ($W = 4$); that is the first count, out of the 271. Row 3 and row 4 are similar, etc. In each of those cases maybe CBN was also significantly better than CBN-A (or the other way around), or DiP was better than CBN, etc, but each was, at most, significantly better than only 1, or 2, or 3 other methods. And, thus, its W was at most 1, 2, or 3, not 4, whereas OT and OT-A both have $W = 4$.

Now, in row 5 OT and OT-A are the best subset, but $W = 3$, meaning that they were significantly better than only three other methods. So there is one method from which they do not differ significantly (call it X), but X itself is, at most, significantly different from 2 (not 3, since it is not in the best subset).

As a different example, in row 8 we see the best subset is made of DiP-A, OT, and OT-A, and $W = 1$. They are all significantly different from one method, not from the remaining two in the best subset or from the remaining two in those not in the best subset.

7 Generalized linear mixed modeling (GLMM) of performance metrics

Here I provide further details about the statistical modeling of performance metrics. As explained in the text, Graph, and possible also Model, could be regarded as random effects, but following standard recommendations in the literature (e.g., Collett, 2003; Hadfield, 2010; Gelman and Hill, 2007) for factors with few (less than, say, 10) levels I model them as fixed effects as otherwise, the estimation of the variance is very poor (in fact, in a Bayesian context, there is no true difference between fixed and random effects, only the relative weight we give to other levels to determine its value). Nevertheless, for the Drivers Known scenario, I rerun all the analysis using Graph (with six levels, so distinguishing between 11-A and 11-B, etc) as random effect, instead of using Conjunction, and Number of Nodes with the with three levels as 11, 9, 7 (and its interactions) as fixed effects and, as we would expect, it had no relevant effect on any of the other coefficients; the quality of the fit (judged by DIC and the CPO –see below) was obviously slightly smaller as, for simplicity, no random interactions of Graph with other terms were included.

When using INLA, all models have been fitted with two different priors for the hyperparameter: the default one (Gamma(a, b), $a = 1, b = 0.00005$) and the one recommended in Fong *et al.* (2010) (Gamma(a, b), $a = 0.5, b = 0.0164$), which lead to the same conclusions regarding the fixed effects. For model validation I have used the cross-validated probability integral transform (PIT) (Held *et al.*, 2010), and a simple comparison of fitted vs. observed values.

When using MCMCglmm (Hadfield, 2010) three chains, from overdispersed starting points, have been run in parallel and, after discarding the burn-in period (with variable number of iterations depending on the model), convergence has been assessed informally using trace plots and more formally with the Gelman-Rubin $\hat{R}$ statistic: chains have been run so that its value is < 1.1 for all parameters (Gelman and Hill, 2007, e.g., see section 16.4 in). All results are based on a total effective sample size of at least 1000 for each parameter estimate. Note that for the model for Diff in the Drivers Unknown is not clear if convergence has been reached.

For model selection, in the INLA fits the mean logarithmic conditional predictive ordinate (CPO) (Roos and Held, 2011) leads to the same choices as using the DIC. I have fitted several models of increasing complexity, from models that include only main effects to models including up to all possible four-way interactions in the Drivers Known scenario and up to all three-way interactions in the Drivers Unknown scenario. In all cases, the DIC and the CPO indicated that larger models were to be preferred (e.g., models with four-way interactions preferred over those with three), which reflects the enormous sample size (20 observations per each cell of the fixed effects combinations), an effect that can also be seen in the very small standard deviations of effects (see model fits). The MCMCglmm fits also showed improved (i.e., smaller) DIC with larger model size. Thus, we will focus mainly on estimation, concentrating on factors that have a relevant effect (e.g., section 8.4.3 in Agresti, 2002). Most of the interactions in the three- and four-way interaction models, in addition to being extremely difficult to understand, affect factors not under user control and are of small magnitude. We will therefore be concerned with two-way interactions.

As explained in the text, I have used sum-to-zero contrasts (very similar to the "deviation coding" popular in psychology, except there the coefficients are ± 0.5 and 0 instead of ± 1 and 0). With sum-to-zero contrasts the missing parameter for a factor (or factor combination) is $-\sum$ rest of parameters for that factor, and the intercept is the overall mean. With these contrasts each main effect parameter is to be interpreted as the (marginal) deviation of that level from the overall mean, and the interaction parameter as the deviation of the linear predictor of the cell mean (for that combination of levels) from the addition of the corresponding main effect parameters (e.g., section 3.5.2 in McCullagh and Nelder, 1989). For ease of interpretation of coefficients when using sum-to-zero contrasts I have used *contr.Sum* from the R package car (Fox and Weisberg, 2011).

When interpreting parameters for interaction terms it is important to remember the parameterization. Following section section 3.5.2 in McCullagh and Nelder (1989), suppose two factors, α and β (where α could be, say, Conjunction or no conjunction, and β could be S.Time), with two levels each. Denote their interaction by γ. We will thus have γ_{11}, γ_{12}, γ_{21}, γ_{22}. The constraints

require that

$$\gamma_{11} + \gamma_{12} = 0, \qquad \gamma_{11} + \gamma_{21} = 0,$$
$$\gamma_{21} + \gamma_{22} = 0, \qquad \gamma_{12} + \gamma_{22} = 0$$

Thus, for example, a large γ_{11} (i.e., a large of level 1 of α and level 1 of β) means a small γ_{12} and a small γ_{21}. So when thinking about this large γ_{11} we can see that being β_1, having α_1 vs. α_2 leads to a larger value. Analogously, we can see that, being α_1, having β_1 leads to a larger value than having β_2. This can be generalized immediately to factors with more than two levels each.

When interpreting model fits, recall that these are generalized linear models and, therefore, for the binomial models the effect of having level i instead of level j of a variable is to change the odds ratio by $e^{\beta_i - \beta_j}$; likewise, for the Poisson models, $e^{\beta_i - \beta_j} = \frac{\mu_i}{\mu_j}$, where μ_i is the Poisson parameter (the mean) for level i. To ease interpretation, plots of the parameters from model fits show the exponential of the coefficient (so they can be directly read as changes in the odds ratio or the scale of the Poisson parameter).

8 Examples of inferred graphs

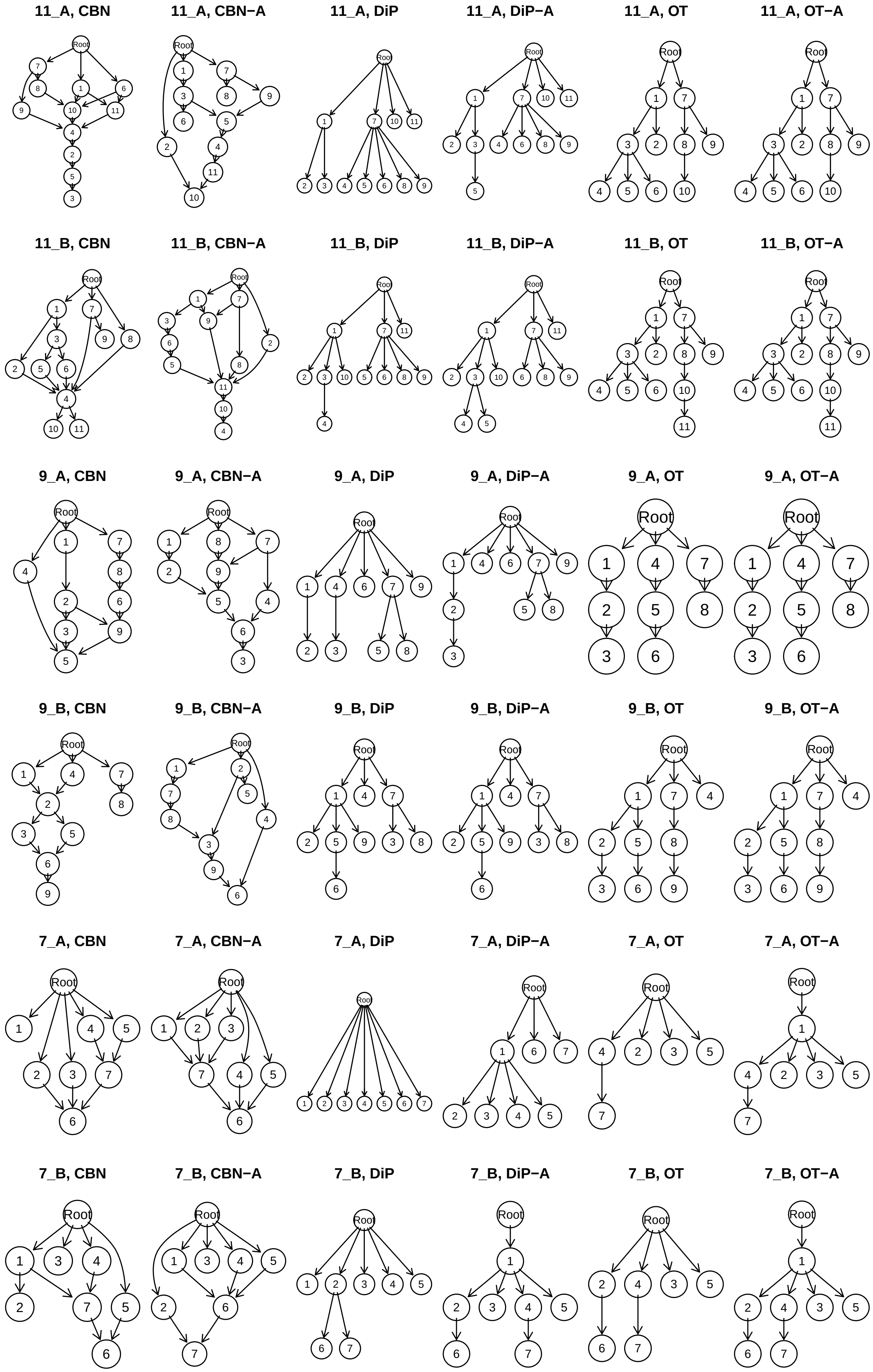
The following figures show examples of fits, from each of the six methods, for the two scenarios, and under each Model and Graph. The inferred graph shown is one chosen randomly among the 20 possible ones. Across rows (i.e., across Method), the data set is the same, so those correspond to the same data being fitted by different methods.

To minimize the impact of other factors, all figures are for S.Size = 1000, S.Type = whole tumor (0.5), S.Time = last, and sh = Inf.

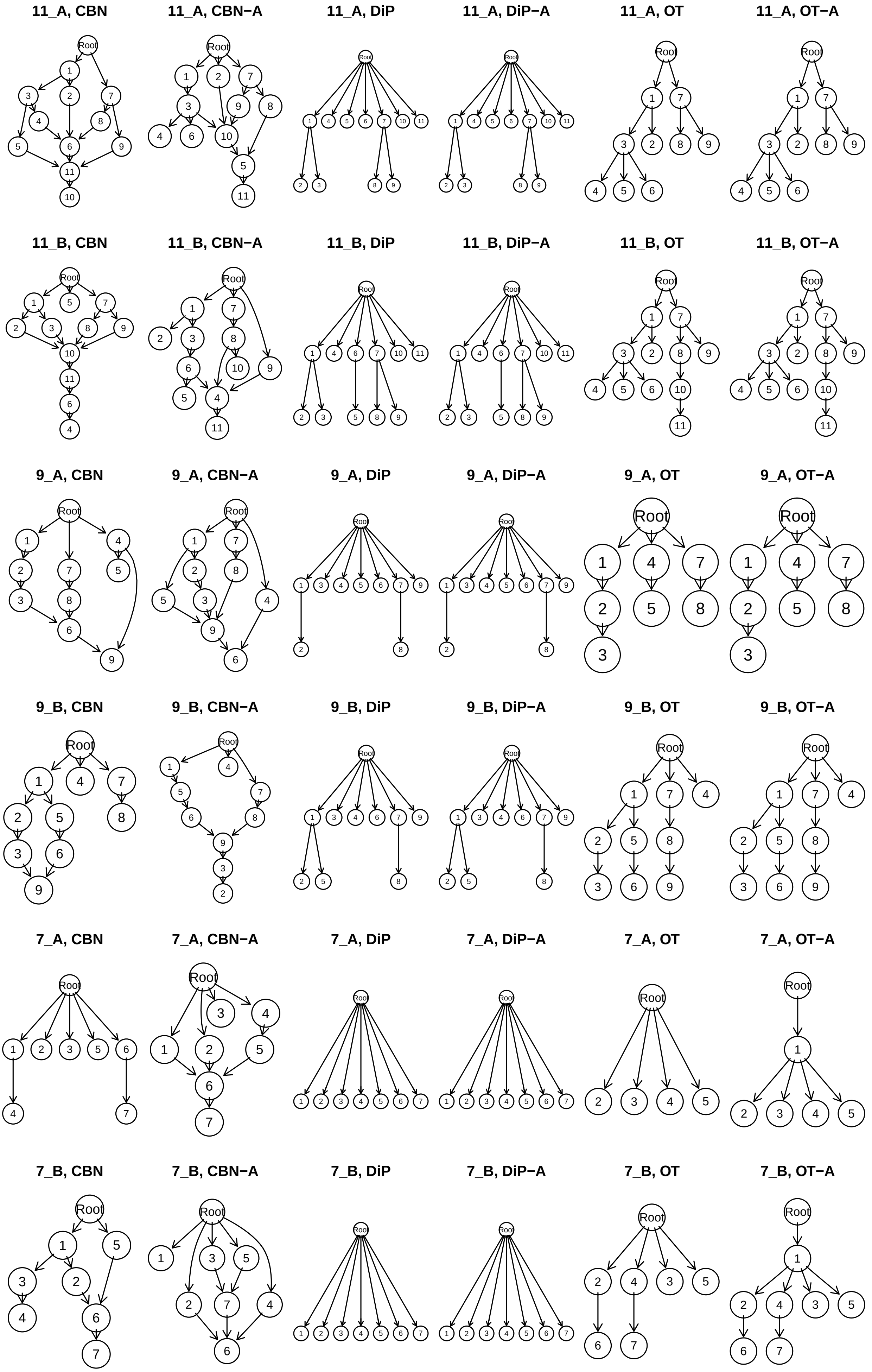
The original, true graphs, are given in Section 3. Note that, especially under Filter = S1, many inferred graphs show nodes that are not really drivers (and that, therefore, should not have been in the graph at all).

8.1 Drivers Known

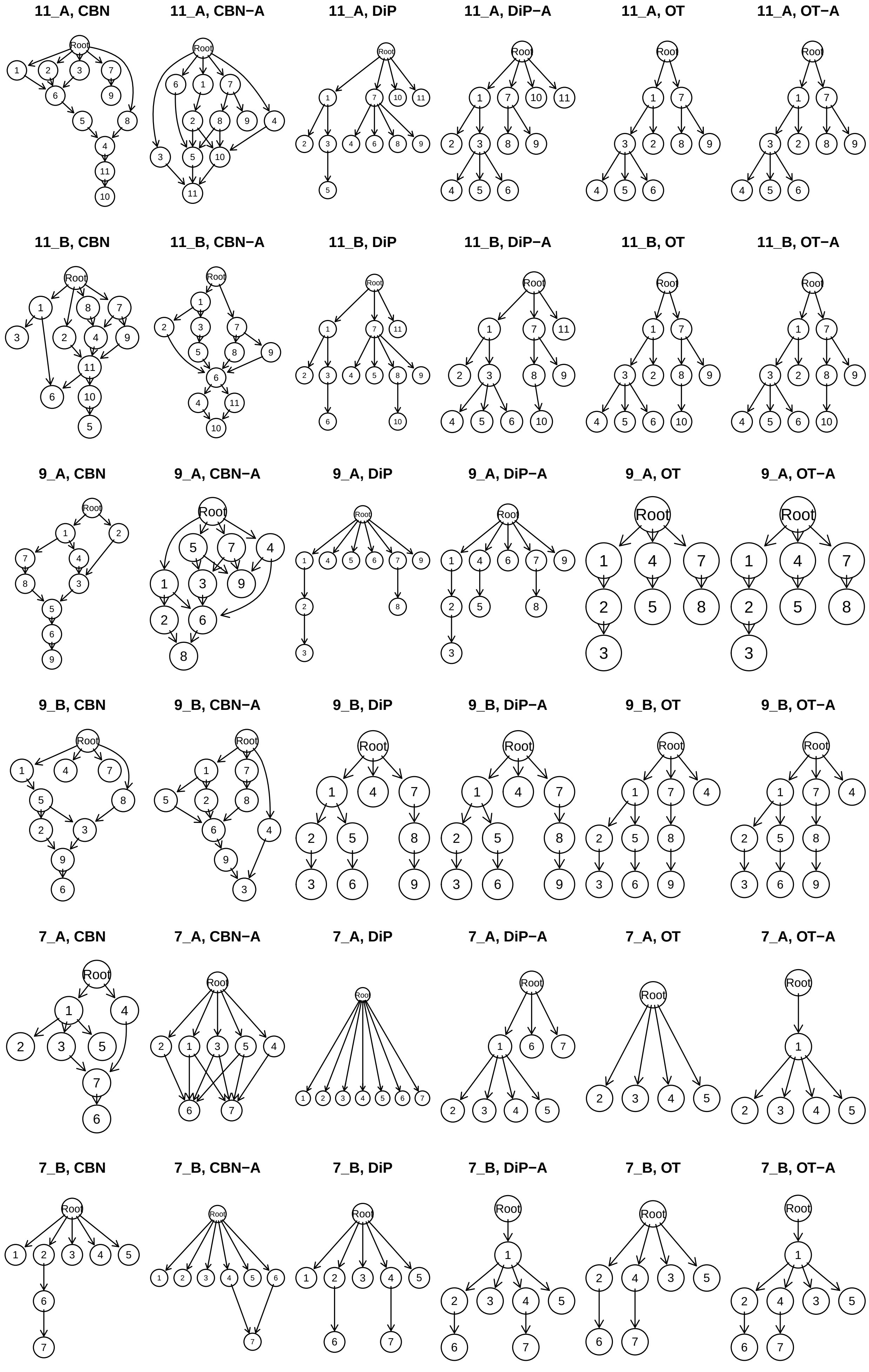
Filtering = NP. Model = Bozic



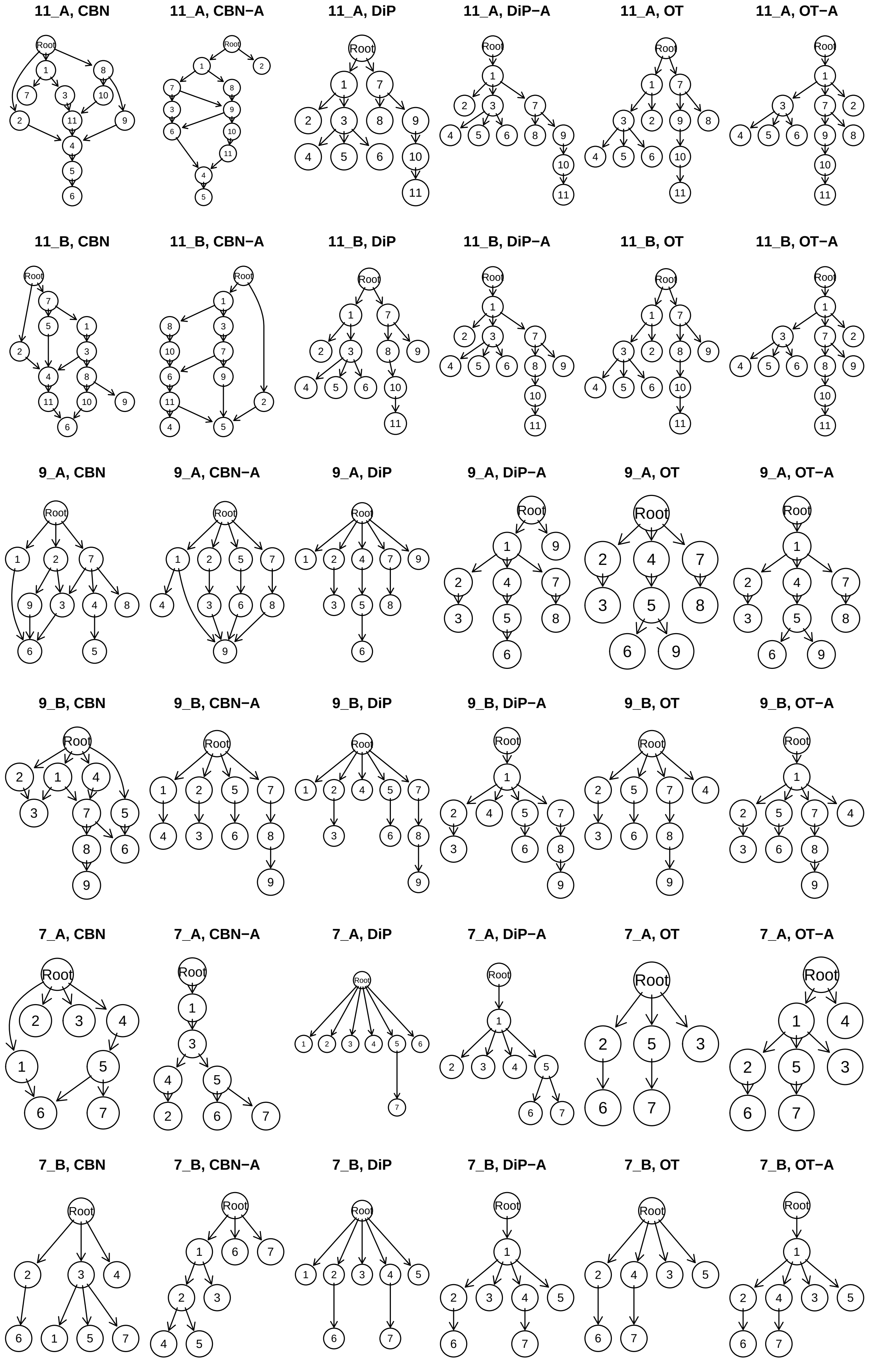
Filtering = NP. Model = exp



Filtering = NP. Model = McF_4

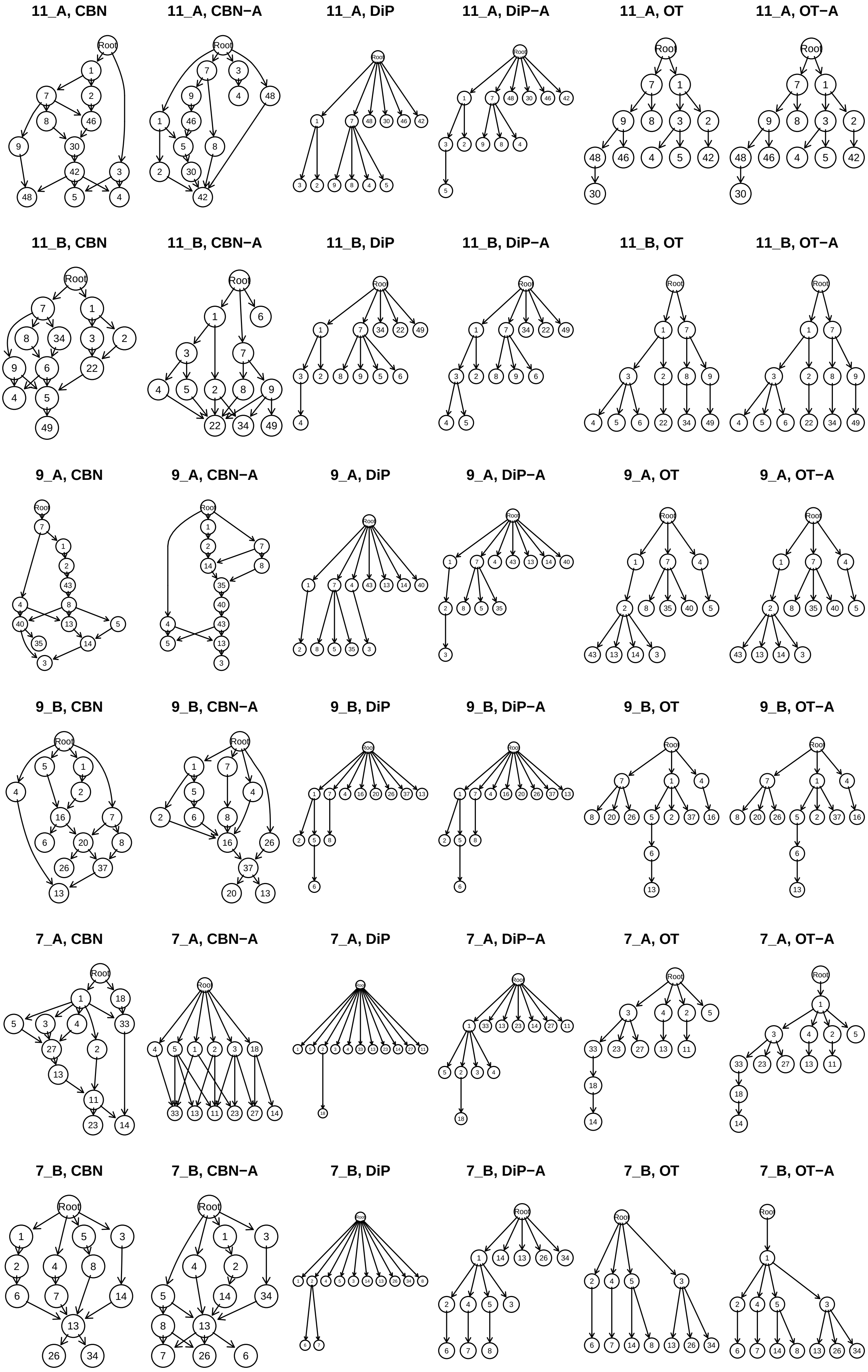


Filtering = NP. Model = McF_6

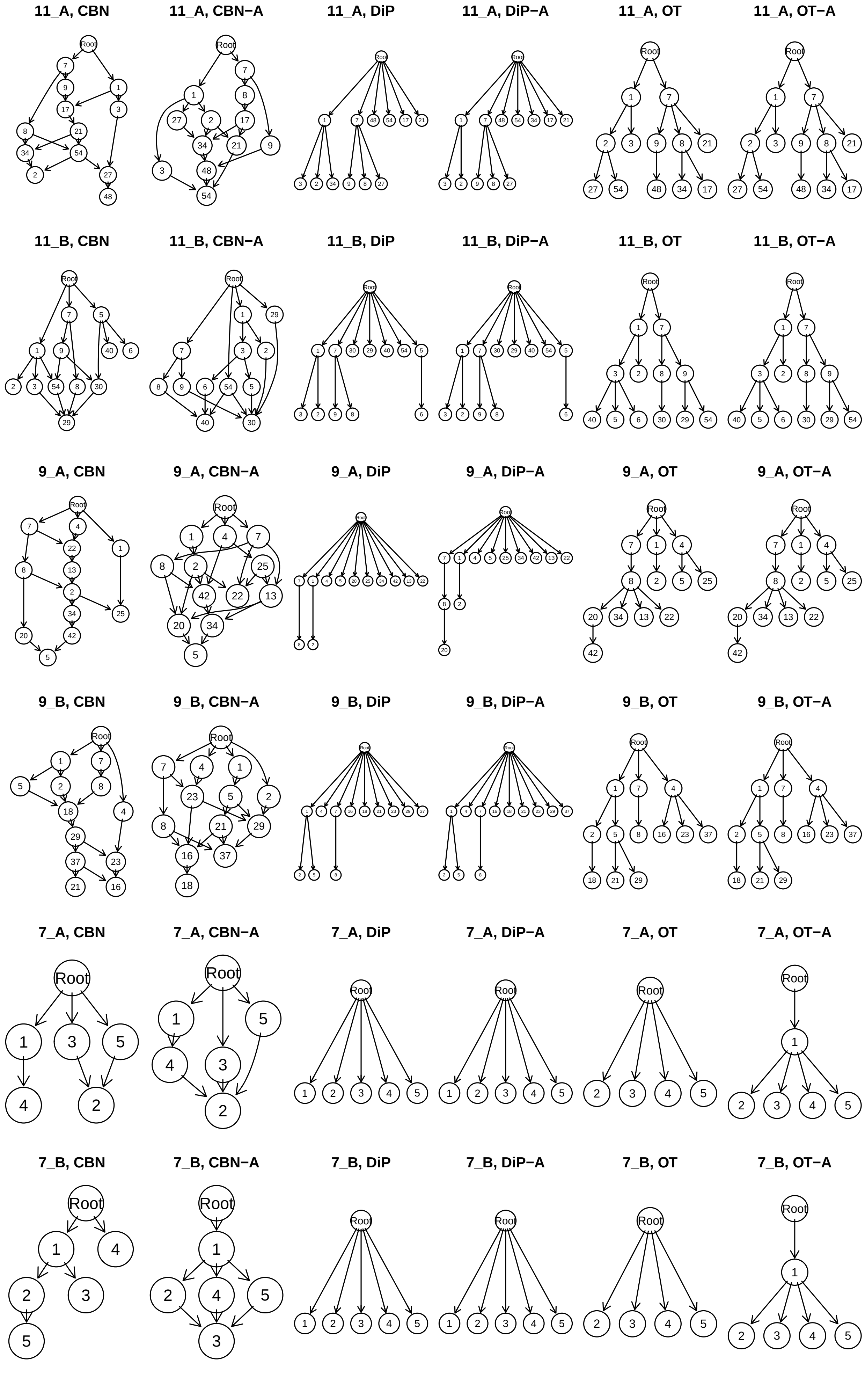


8.2 Filter = S1

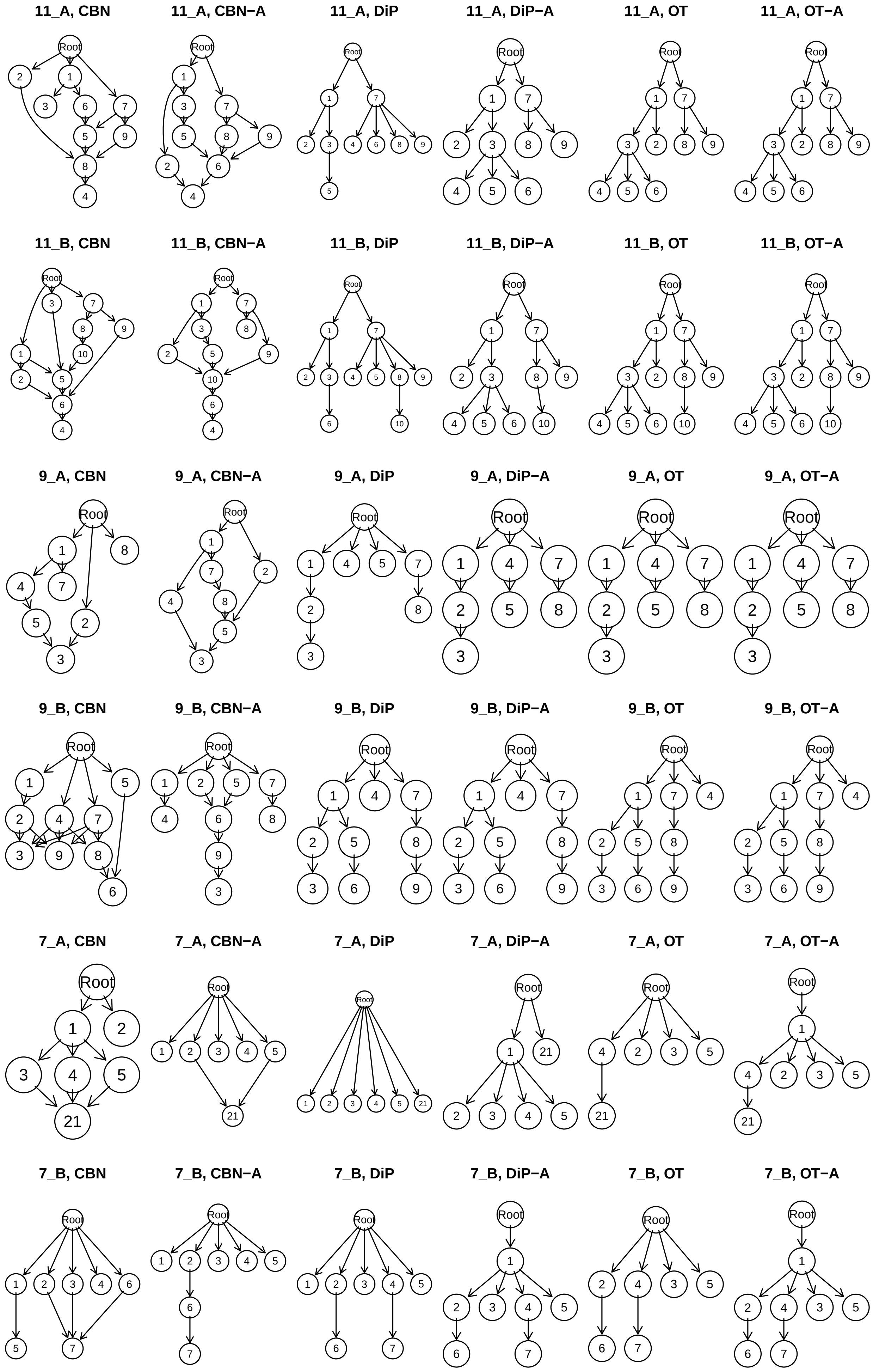
Filtering = S1. Model = Bozic



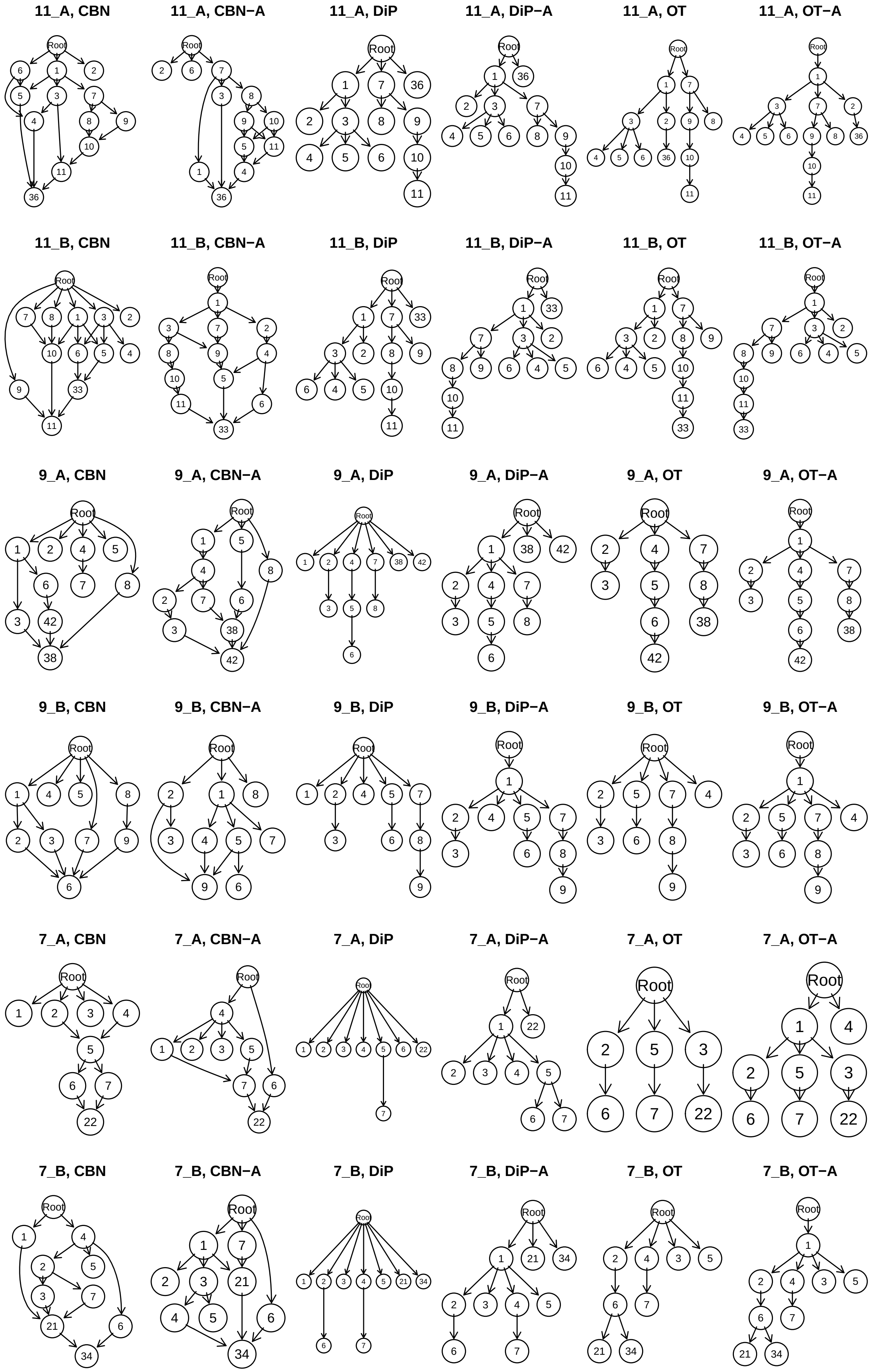
Filtering = S1. Model = exp



Filtering = S1. Model = McF_4

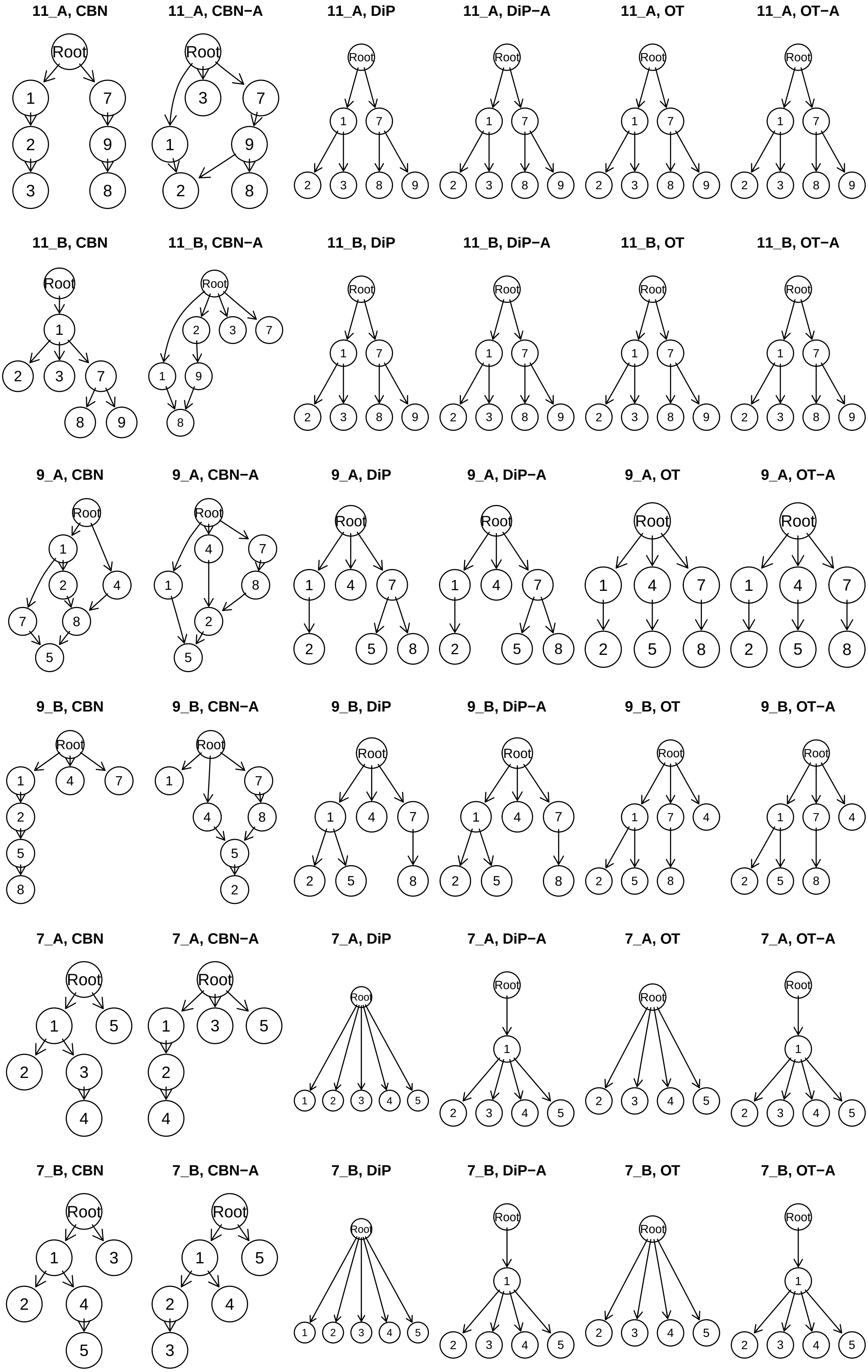


Filtering = S1. Model = McF_6

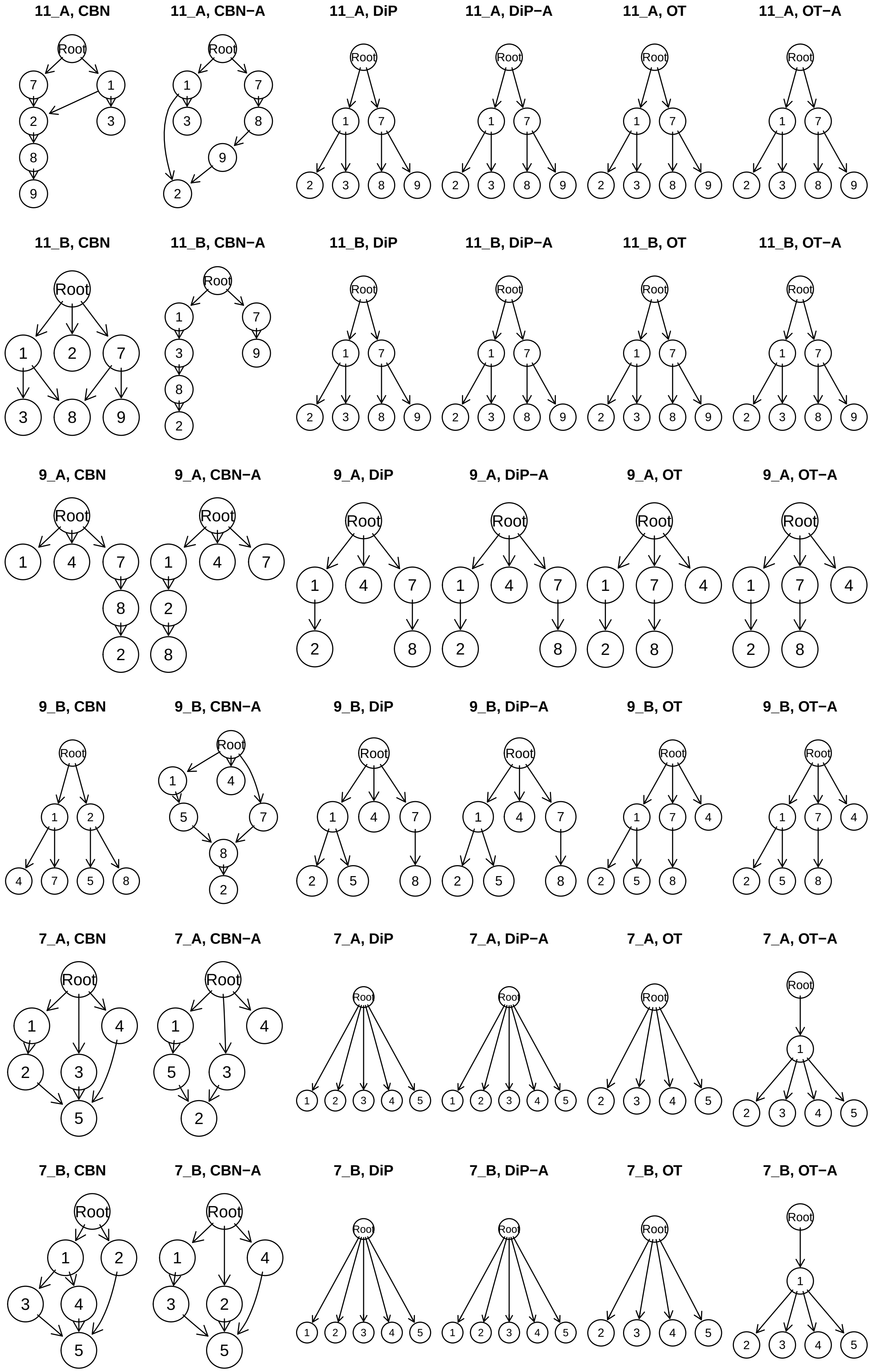


8.3 Filter = S5

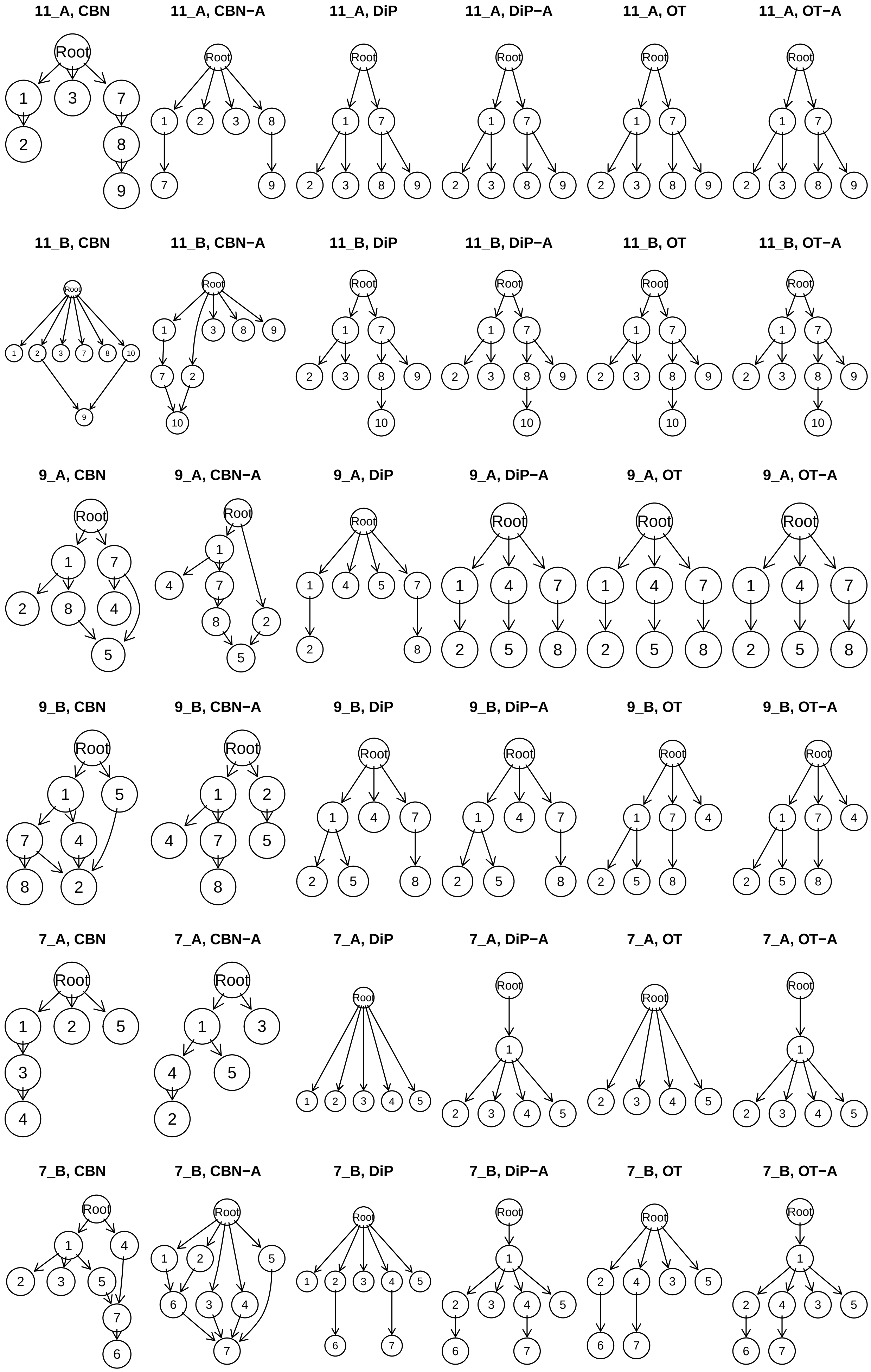
Filtering = S5. Model = Bozic



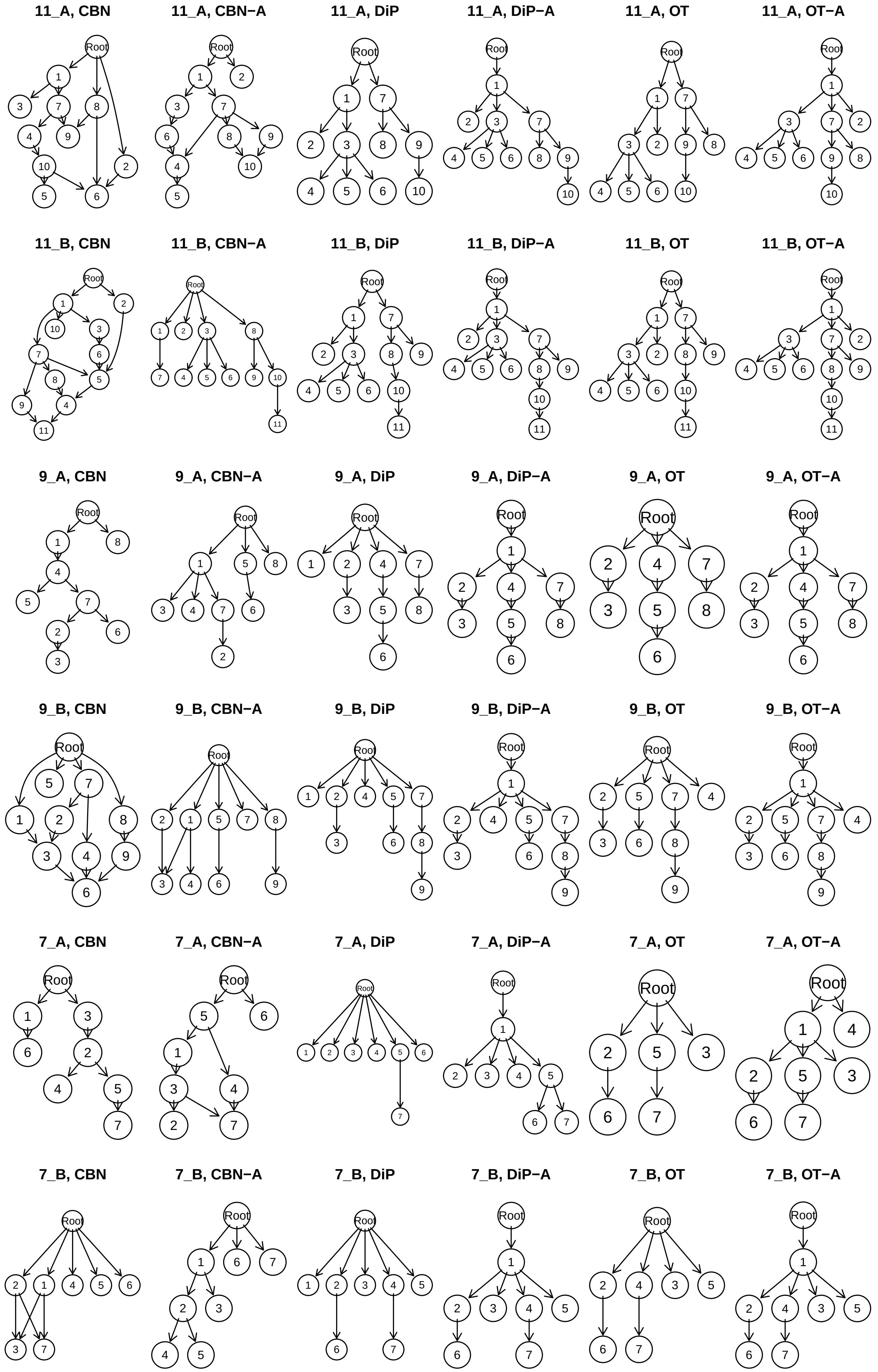
Filtering = S5. Model = exp



Filtering = S5. Model = McF_4

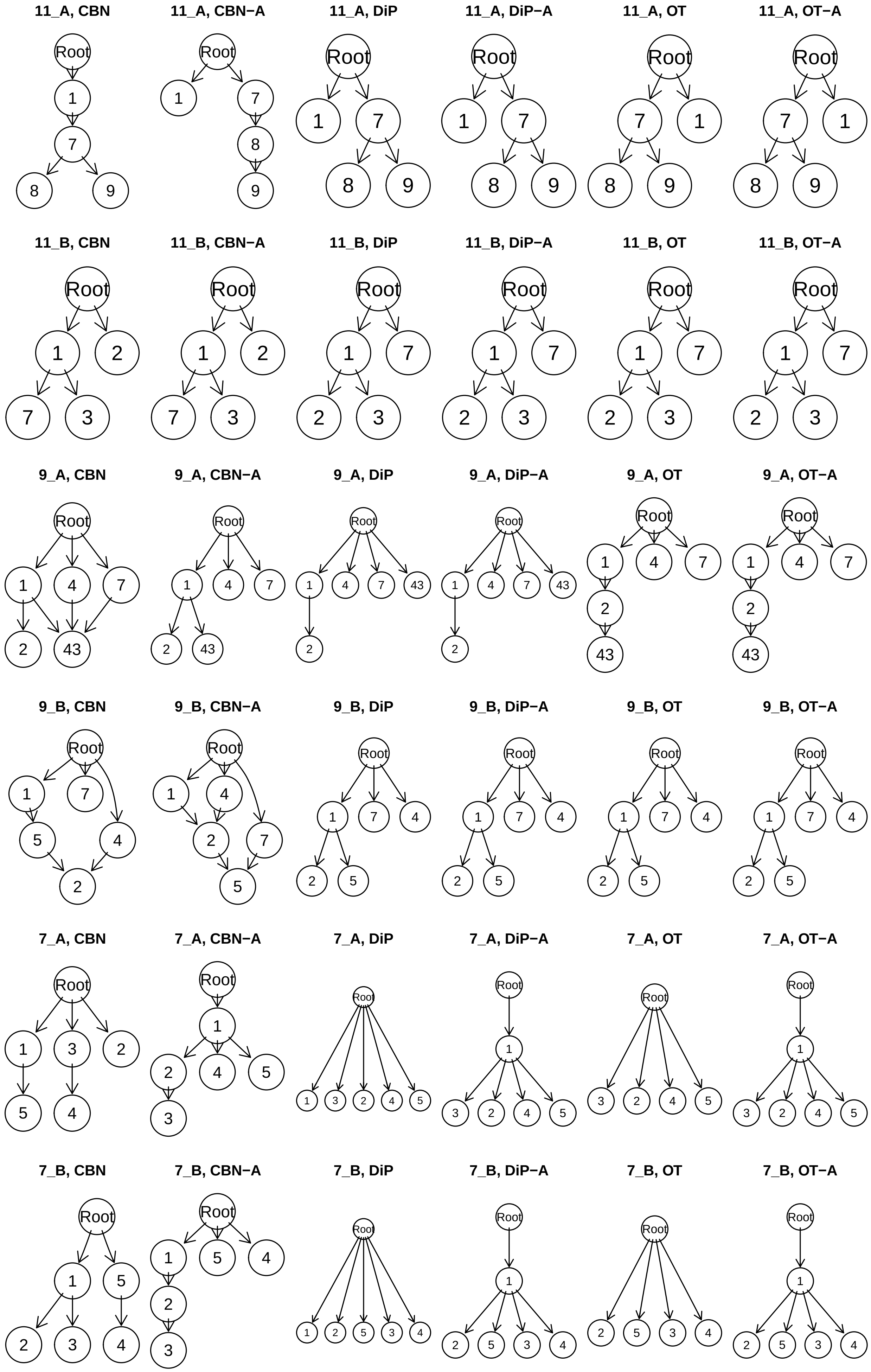


Filtering = S5. Model = McF_6

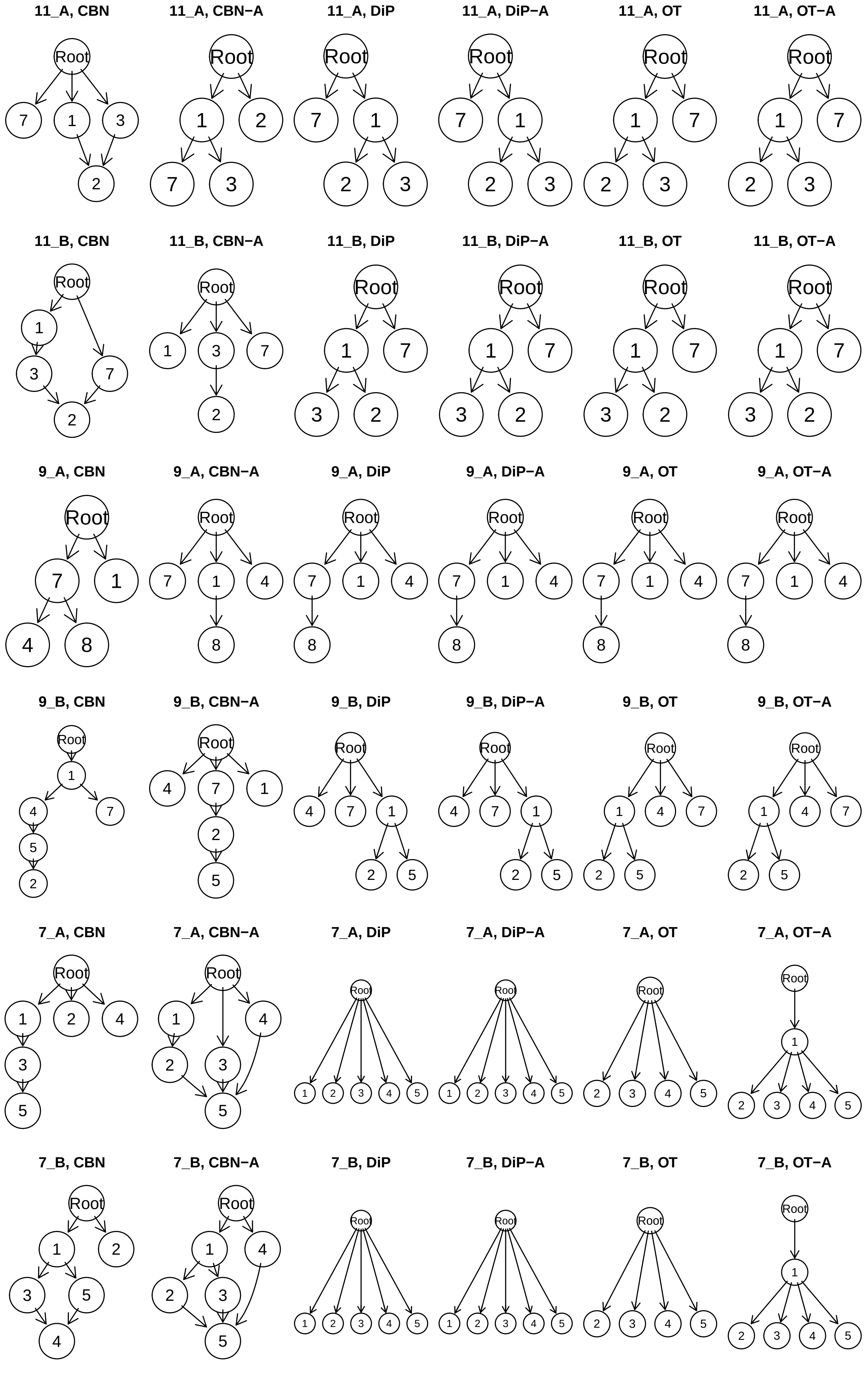


8.4 Filter = J1

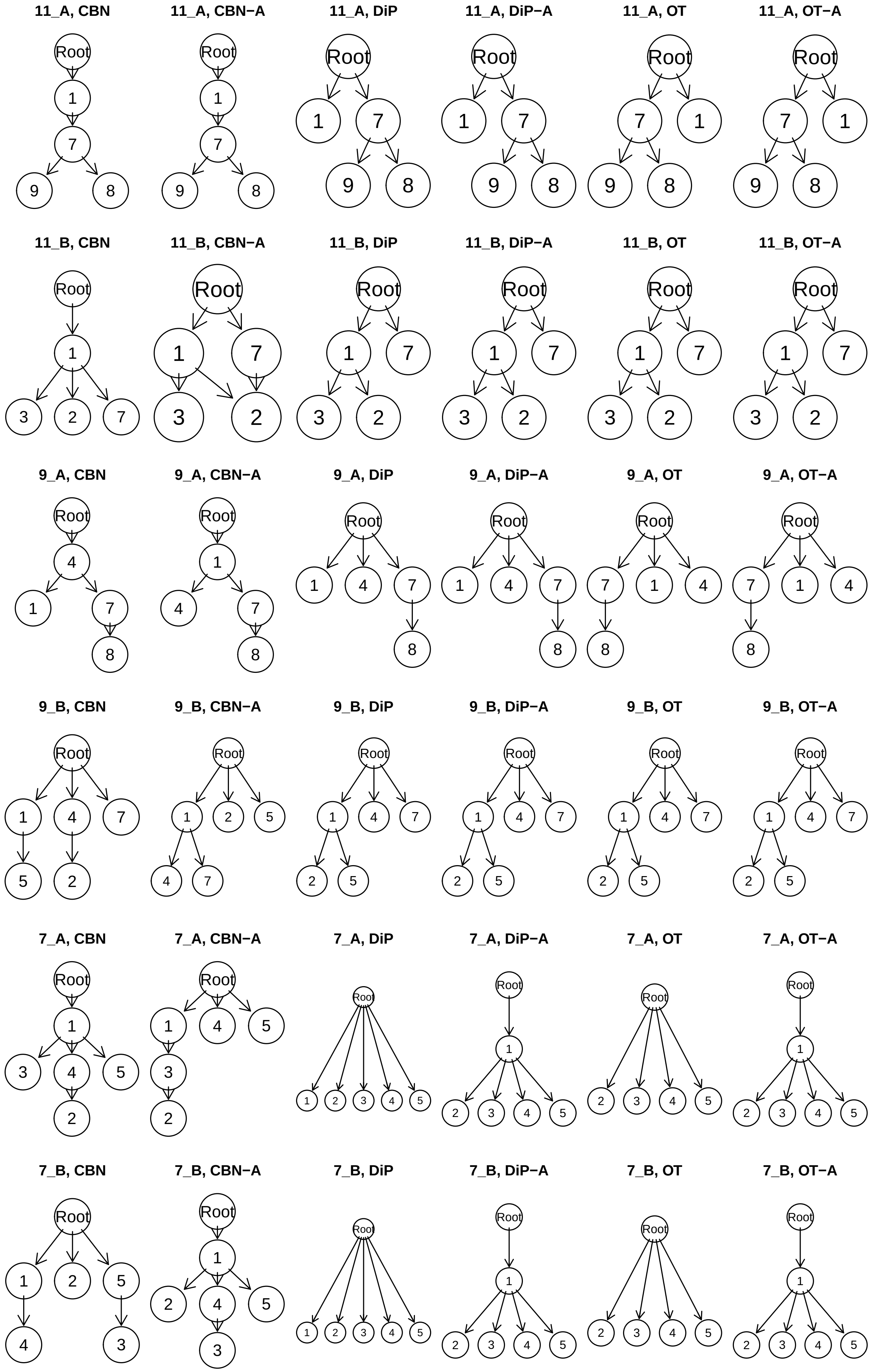
Filtering = J1. Model = Bozic



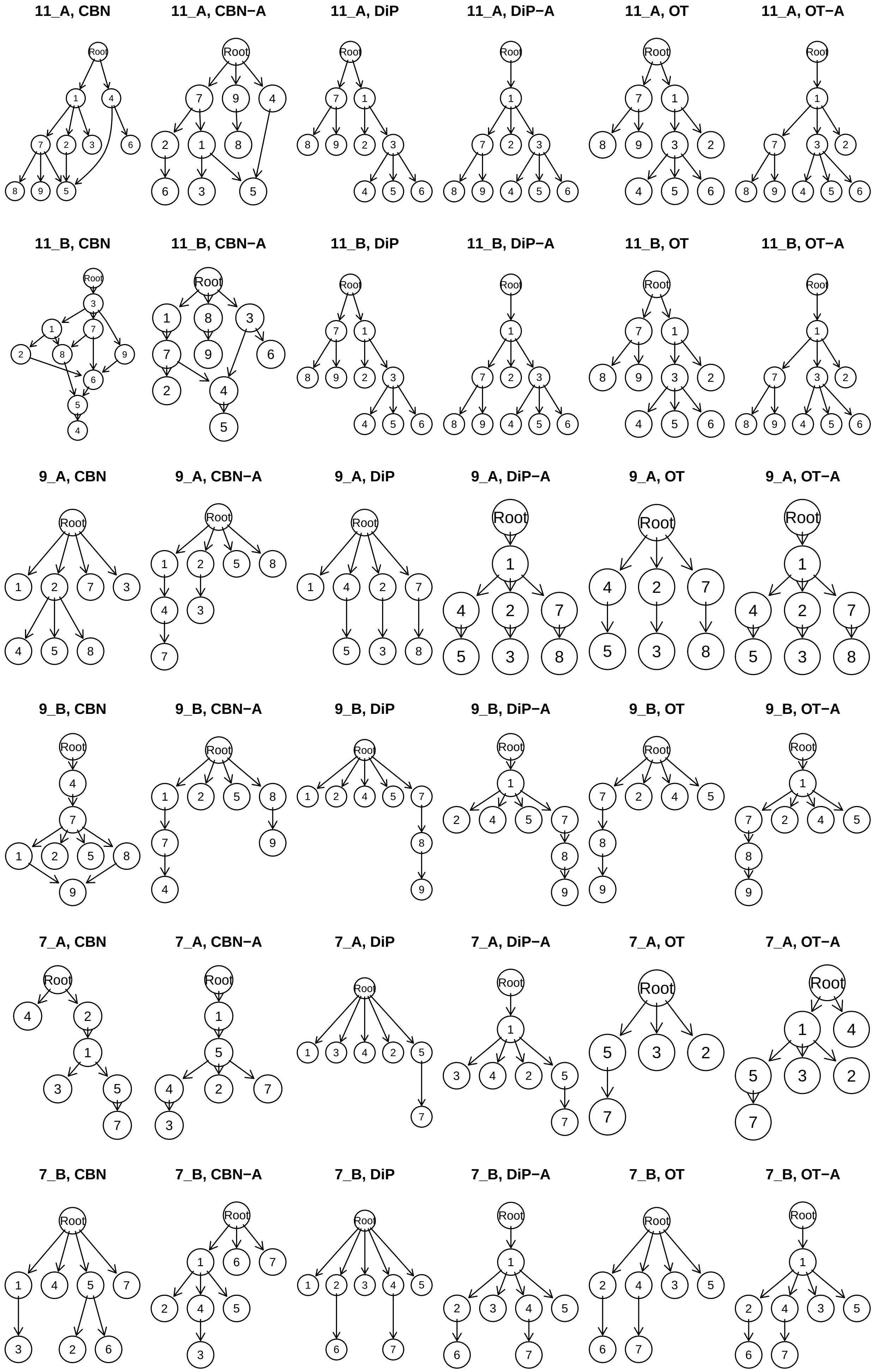
Filtering = J1. Model = exp



Filtering = J1. Model = McF_4

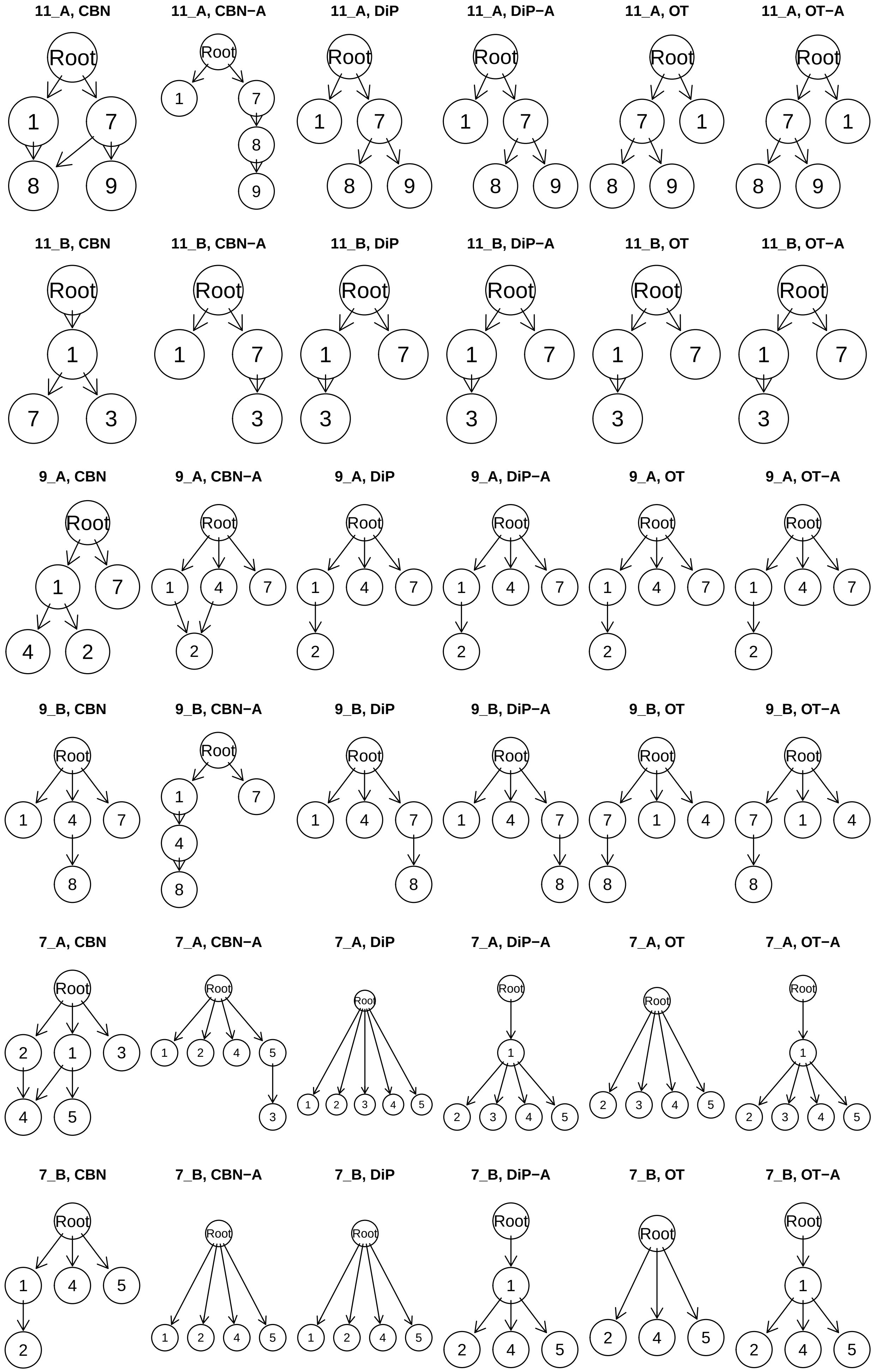


Filtering = J1. Model = McF_6

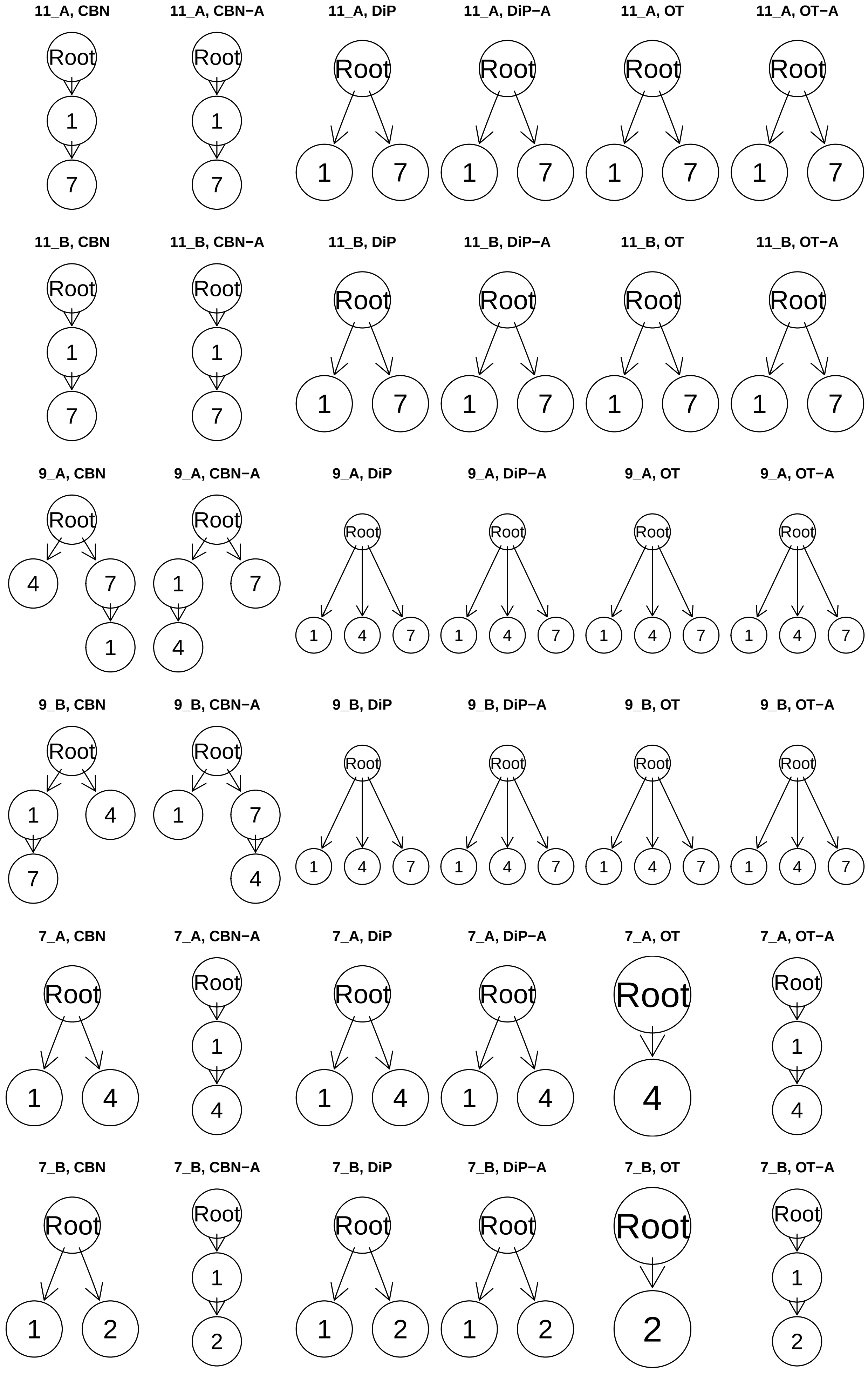


8.5 Filter = J5

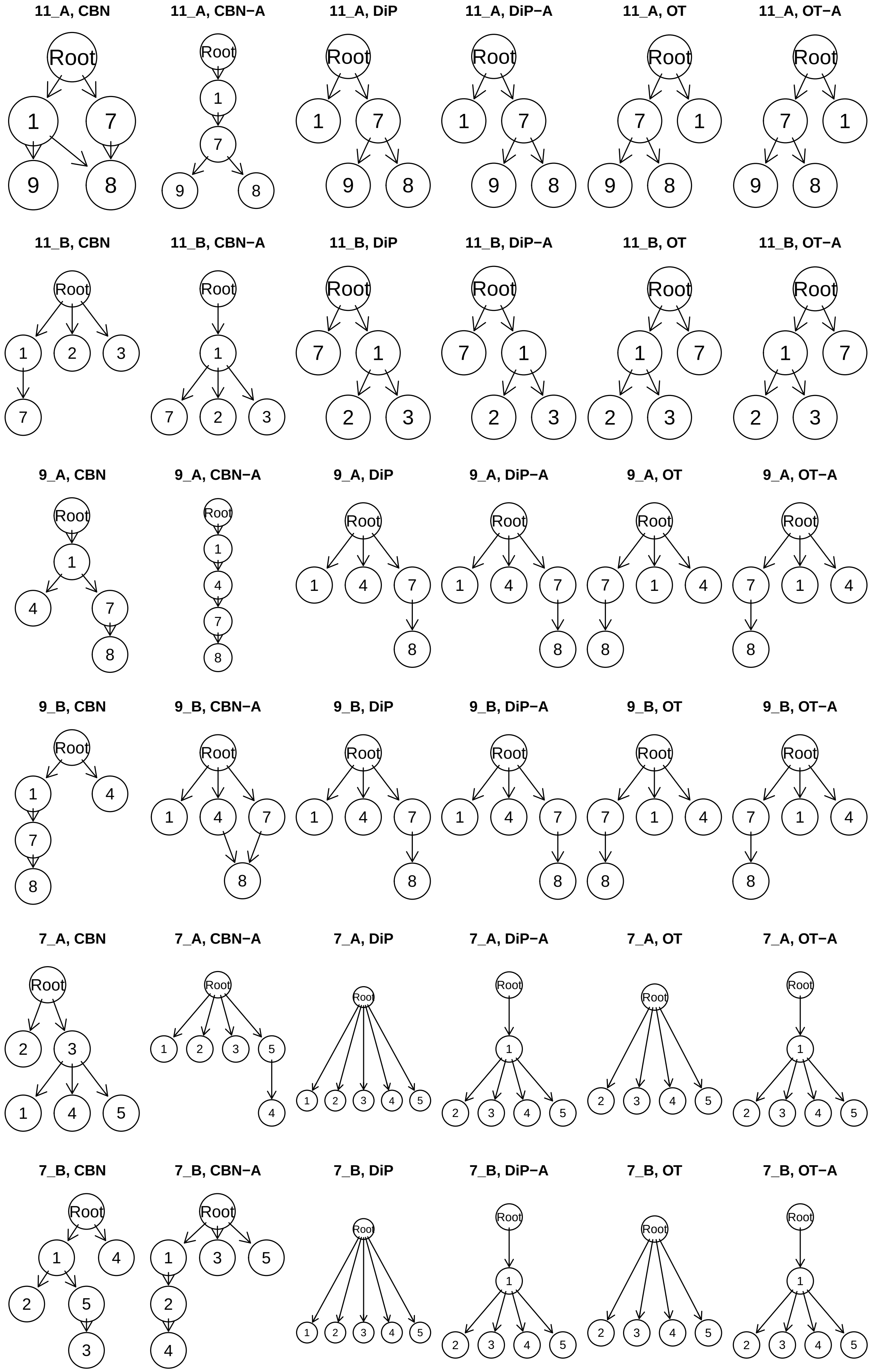
Filtering = J5. Model = Bozic



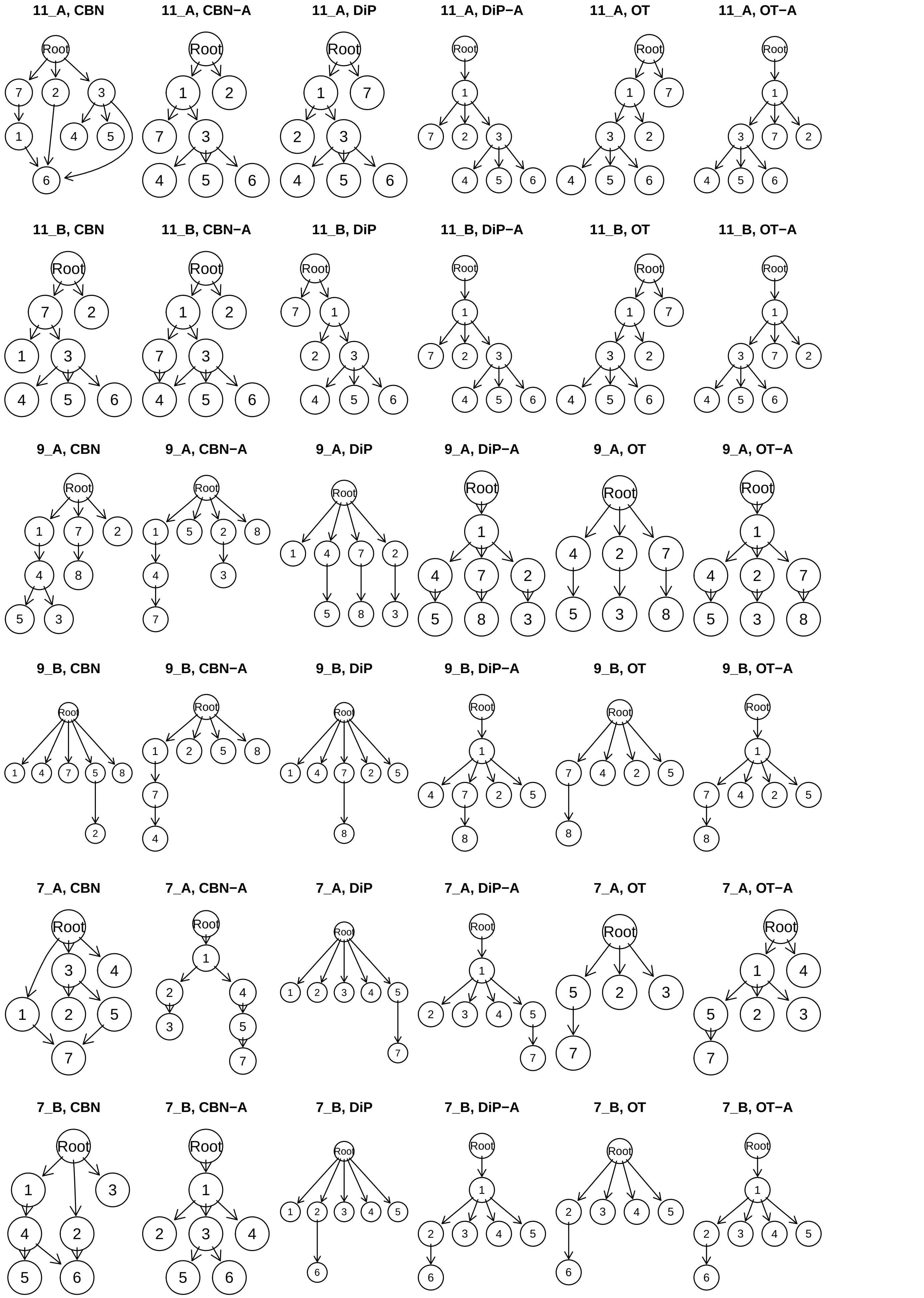
Filtering = J5. Model = exp



Filtering = J5. Model = McF_4



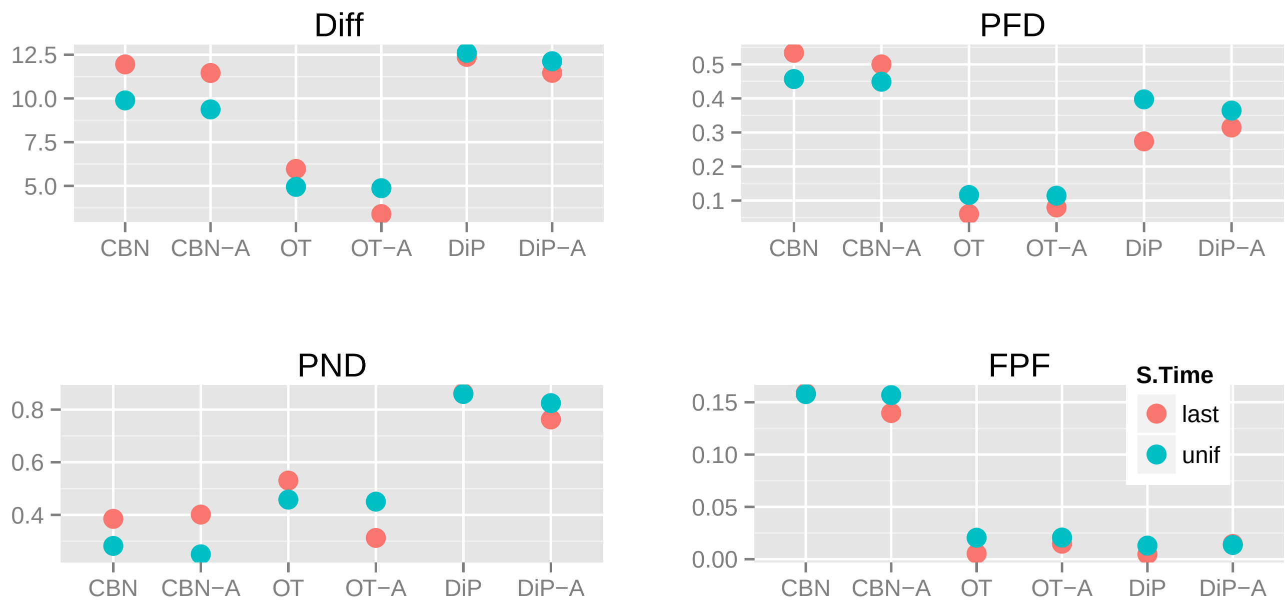
Filtering = J5. Model = McF_6



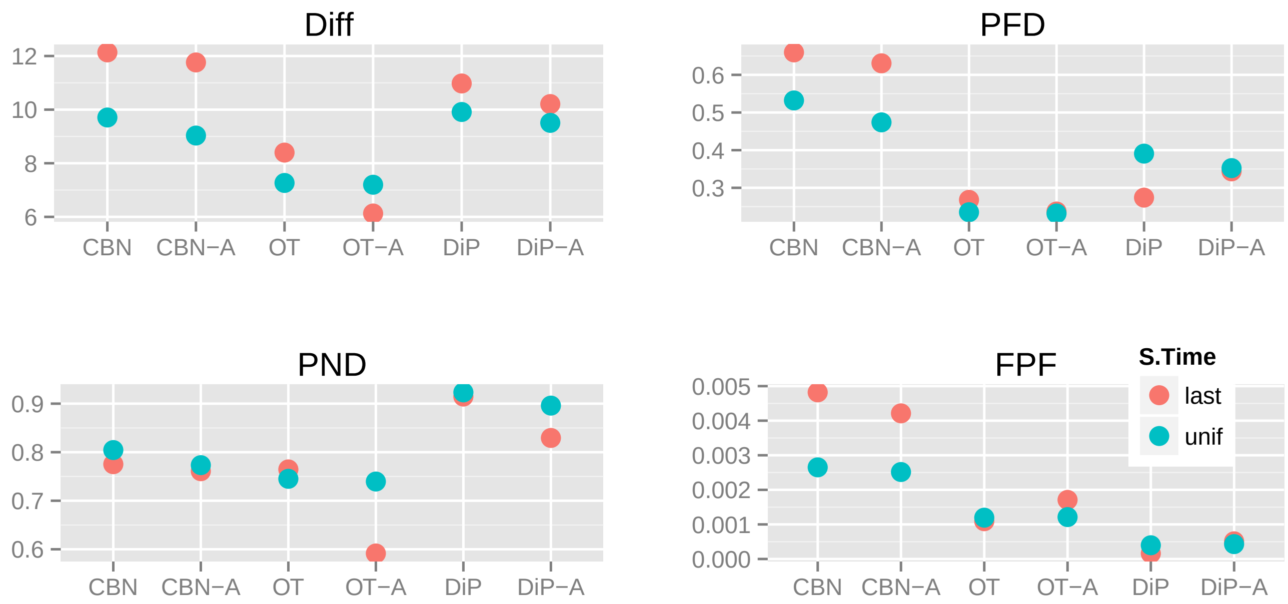
9 Results: marginal plots

The following plots show marginal means of the specified factors for both the Drivers Known and Drivers Unknown scenarios except for those related to Filtering (obviously, only for the Drivers Unknown scenario).

9.1 Method by S.Time

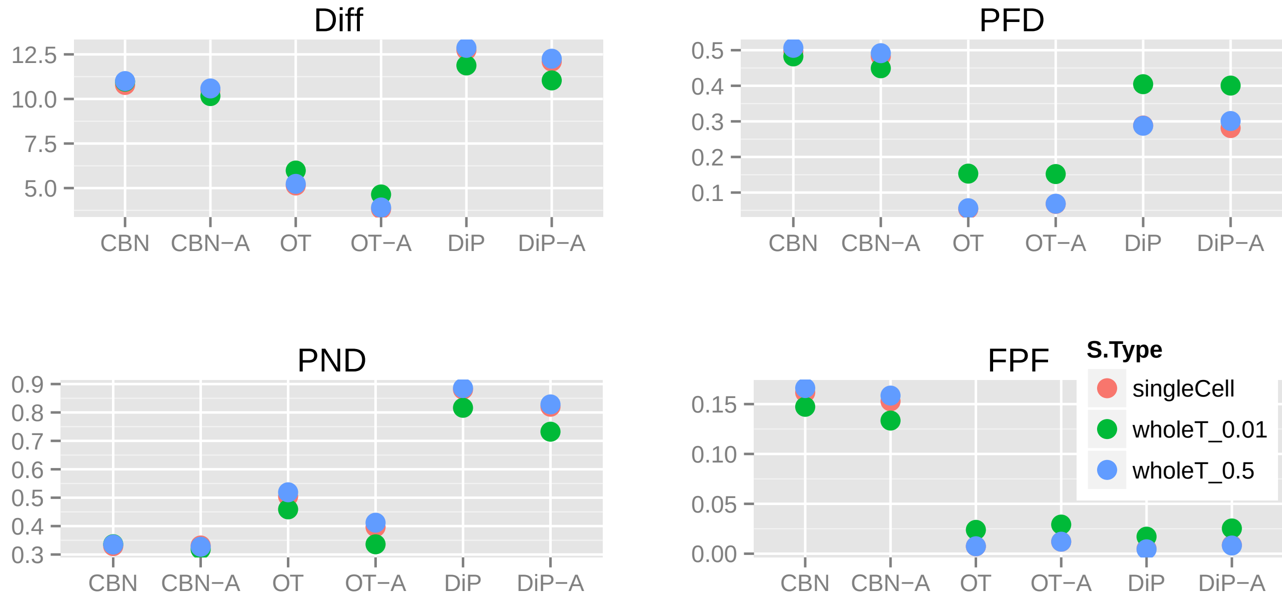


Supplementary Figure 3: Mean of each metric for the different combinations of factors when Drivers Known.

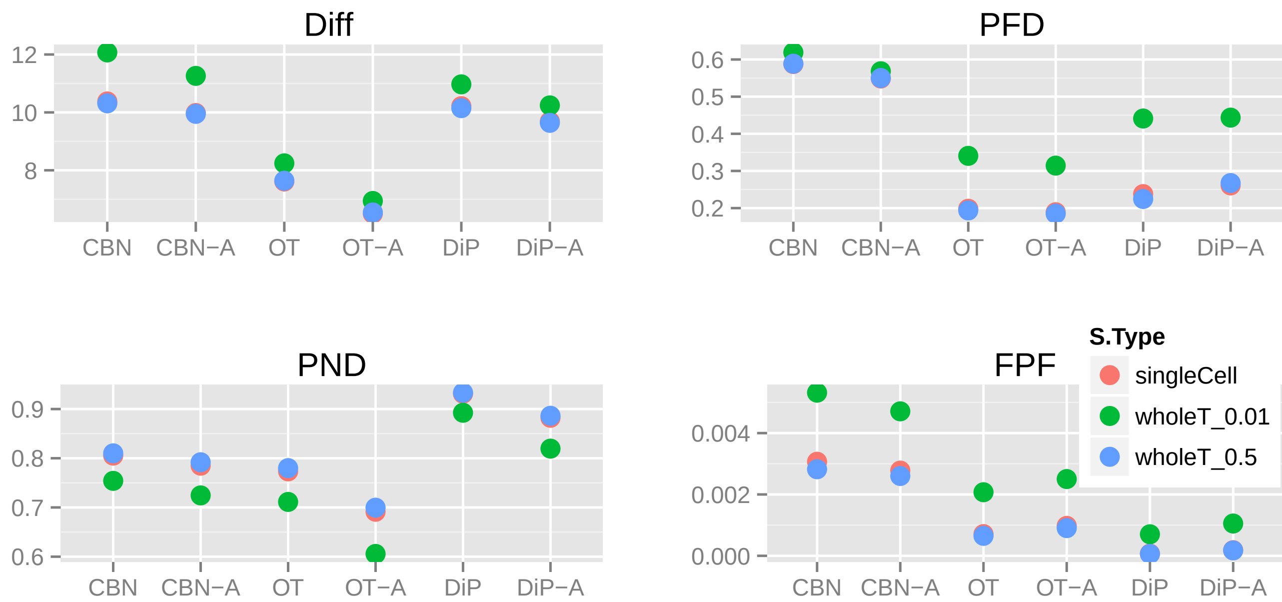


Supplementary Figure 4: Mean of each metric for the different combinations of factors when Drivers Unknown.

9.2 Method by S.Type

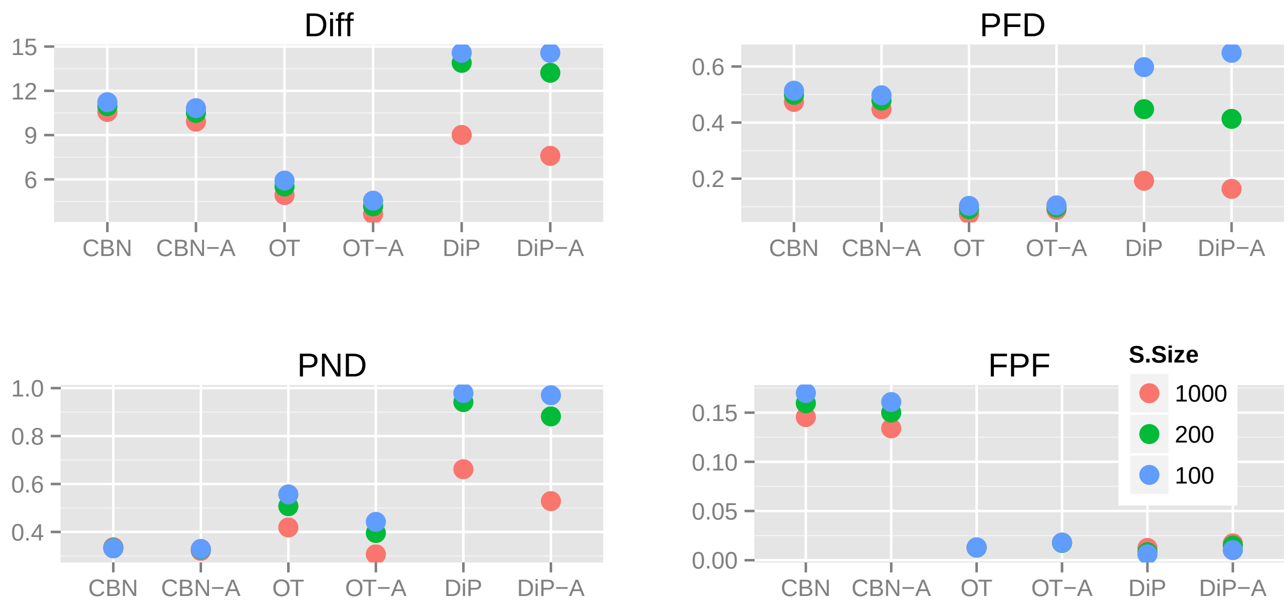


Supplementary Figure 5: Mean of each metric for the different combinations of factors when Drivers Known.

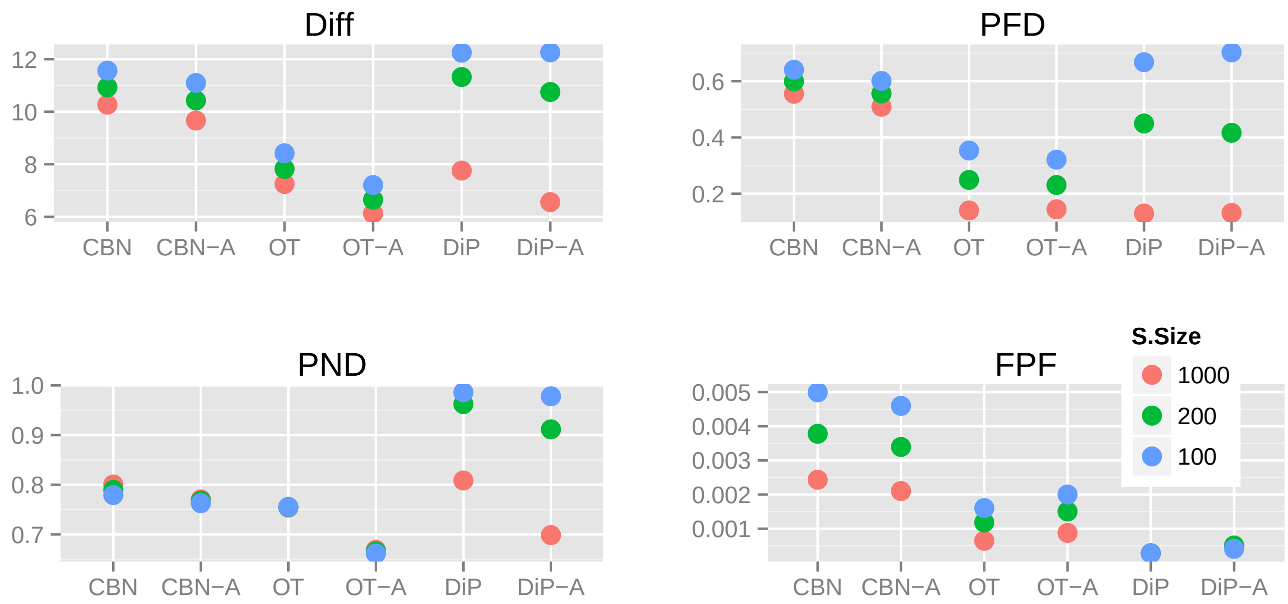


Supplementary Figure 6: Mean of each metric for the different combinations of factors when Drivers Unknown.

9.3 Method by S.Size

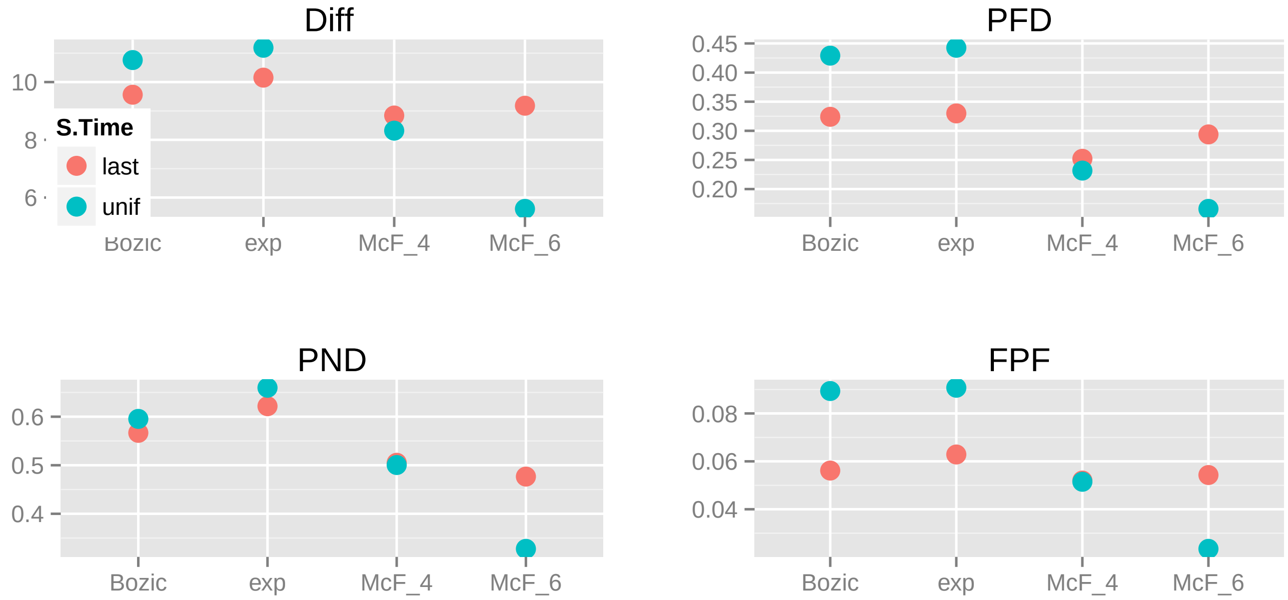


Supplementary Figure 7: Mean of each metric for the different combinations of factors when Drivers Known.



Supplementary Figure 8: Mean of each metric for the different combinations of factors when Drivers Unknown.

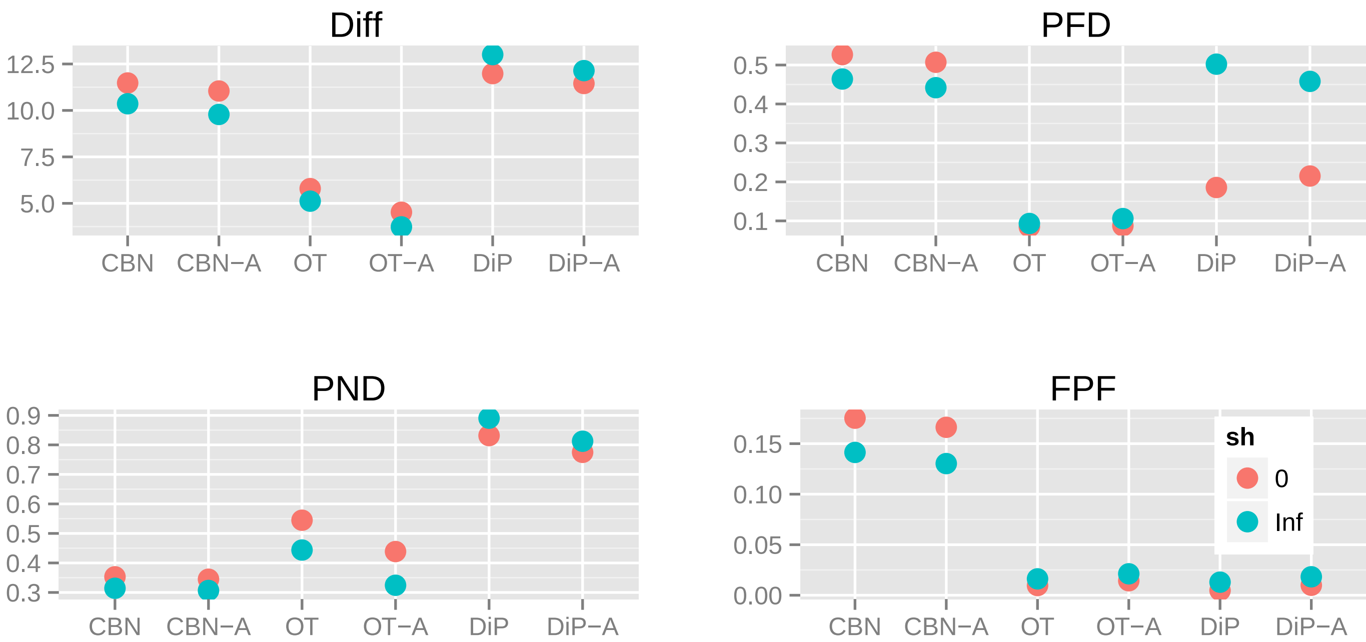
9.4 Model by S.Time



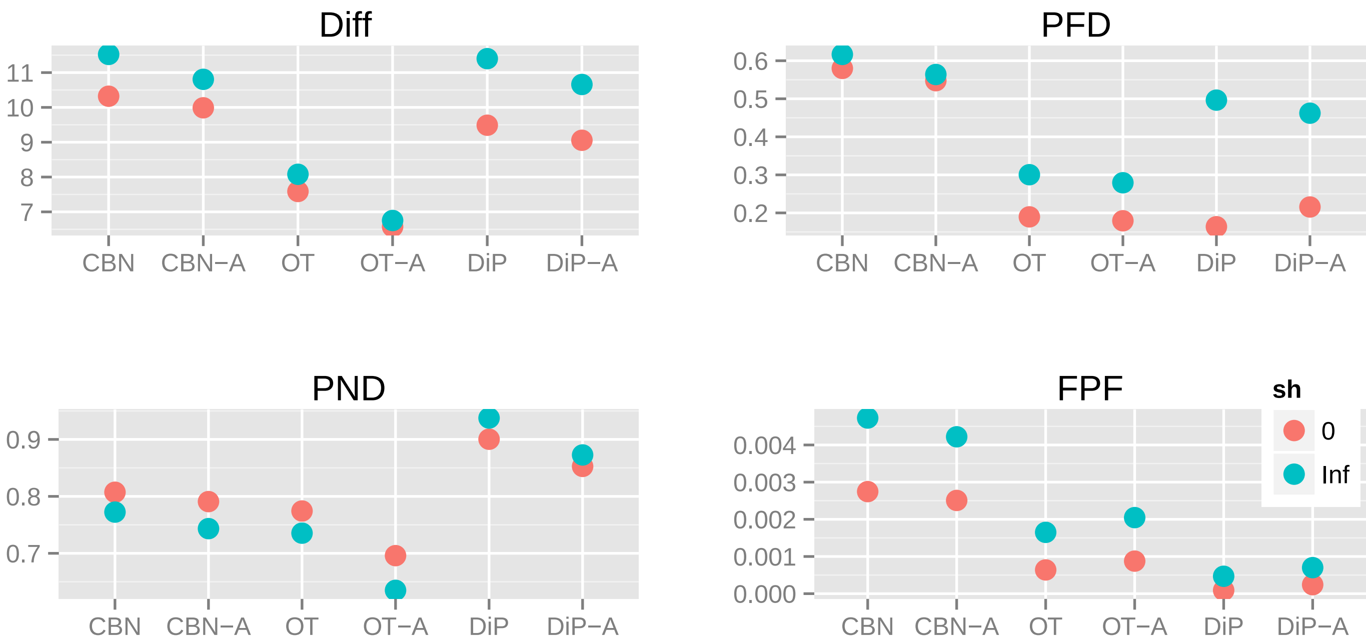
Supplementary Figure 9: Mean of each metric for the different combinations of factors when Drivers Known.

Supplementary Figure 10: Mean of each metric for the different combinations of factors when Drivers Unknown.

9.5 Method by sh

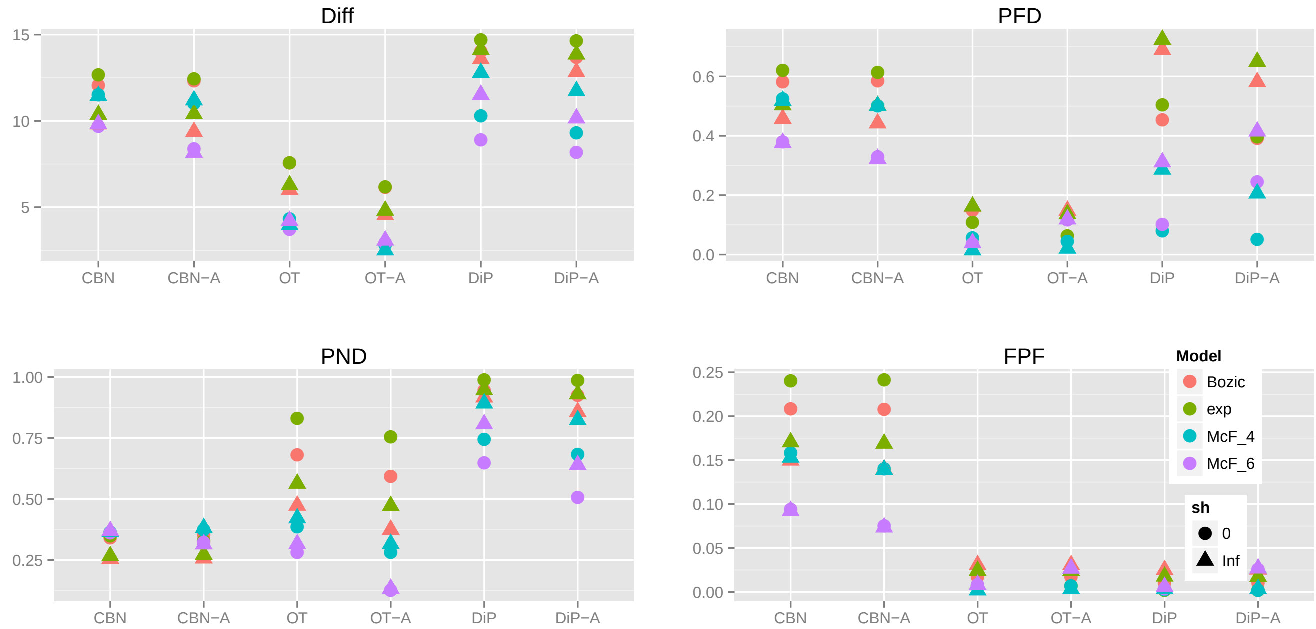


Supplementary Figure 11: Mean of each metric for the different combinations of factors when Drivers Known.

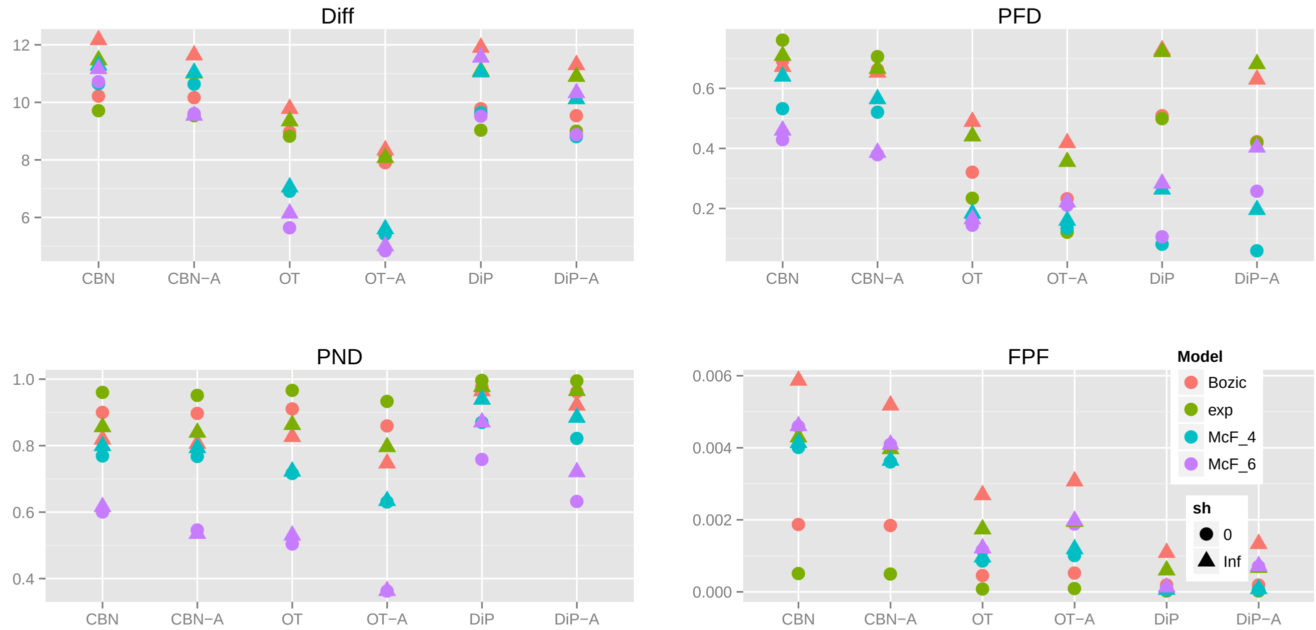


Supplementary Figure 12: Mean of each metric for the different combinations of factors when Drivers Unknown.

9.6 Model by Method by sh

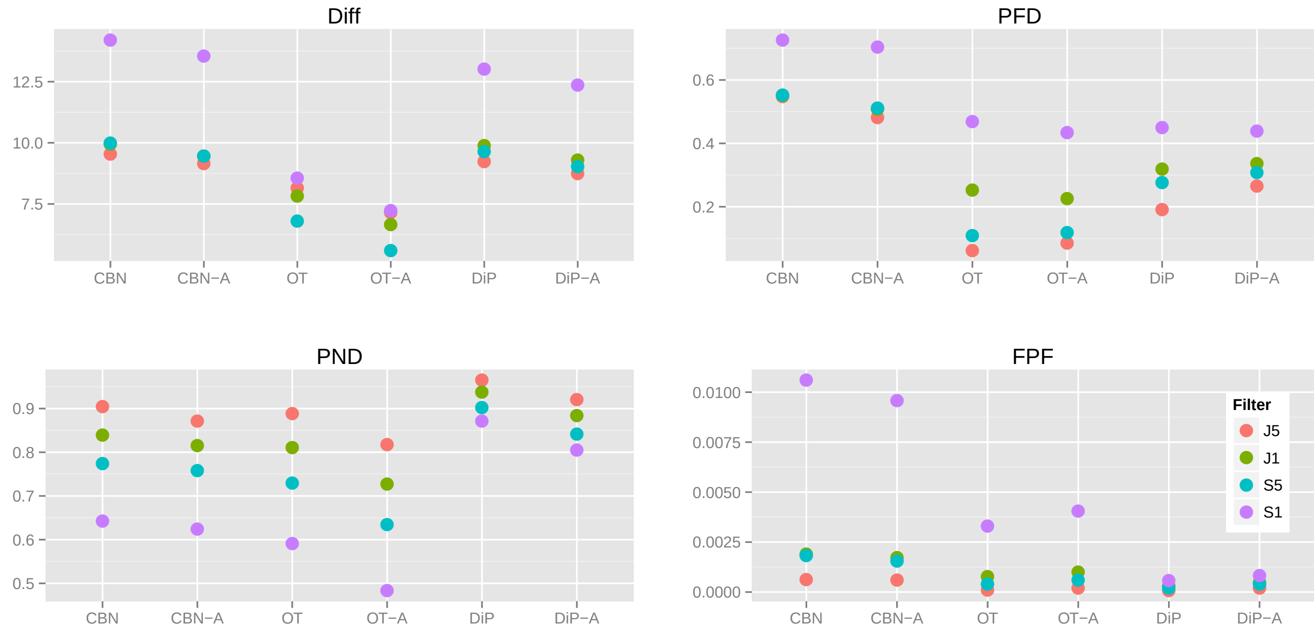


Supplementary Figure 13: Mean of each metric for the different combinations of factors when Drivers Known.



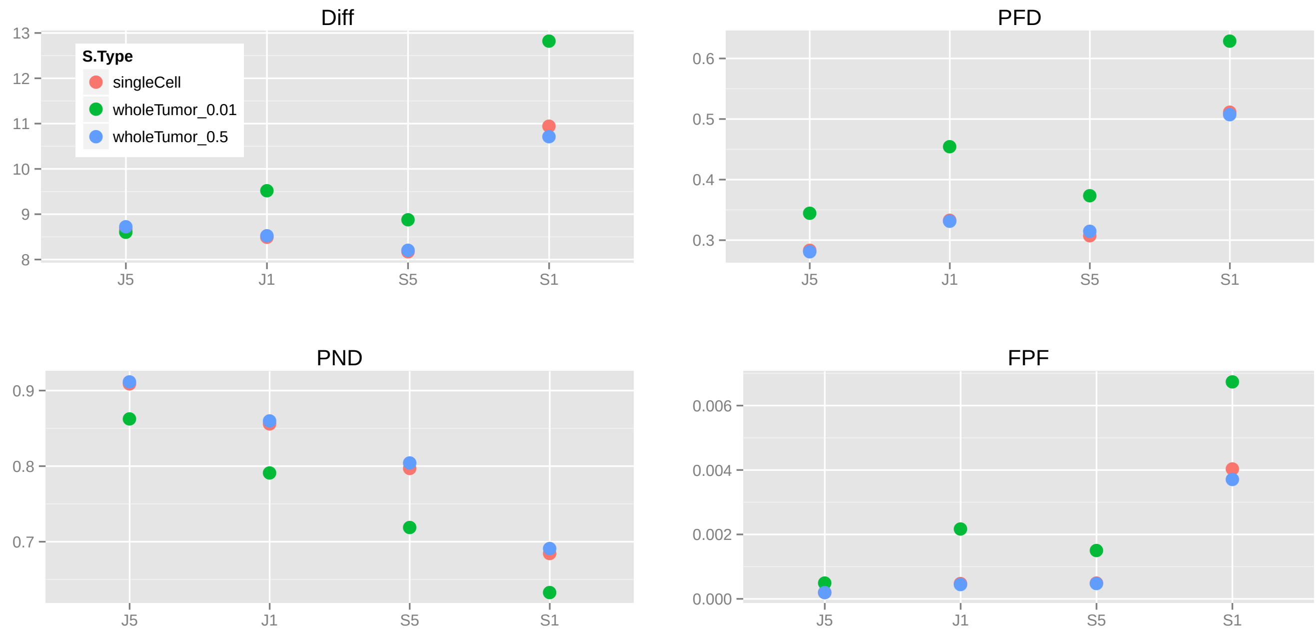
Supplementary Figure 14: Mean of each metric for the different combinations of factors when Drivers Unknown.

9.7 Filter by Method



Supplementary Figure 15: Mean of each metric for the different combinations of factors when Drivers Unknown.

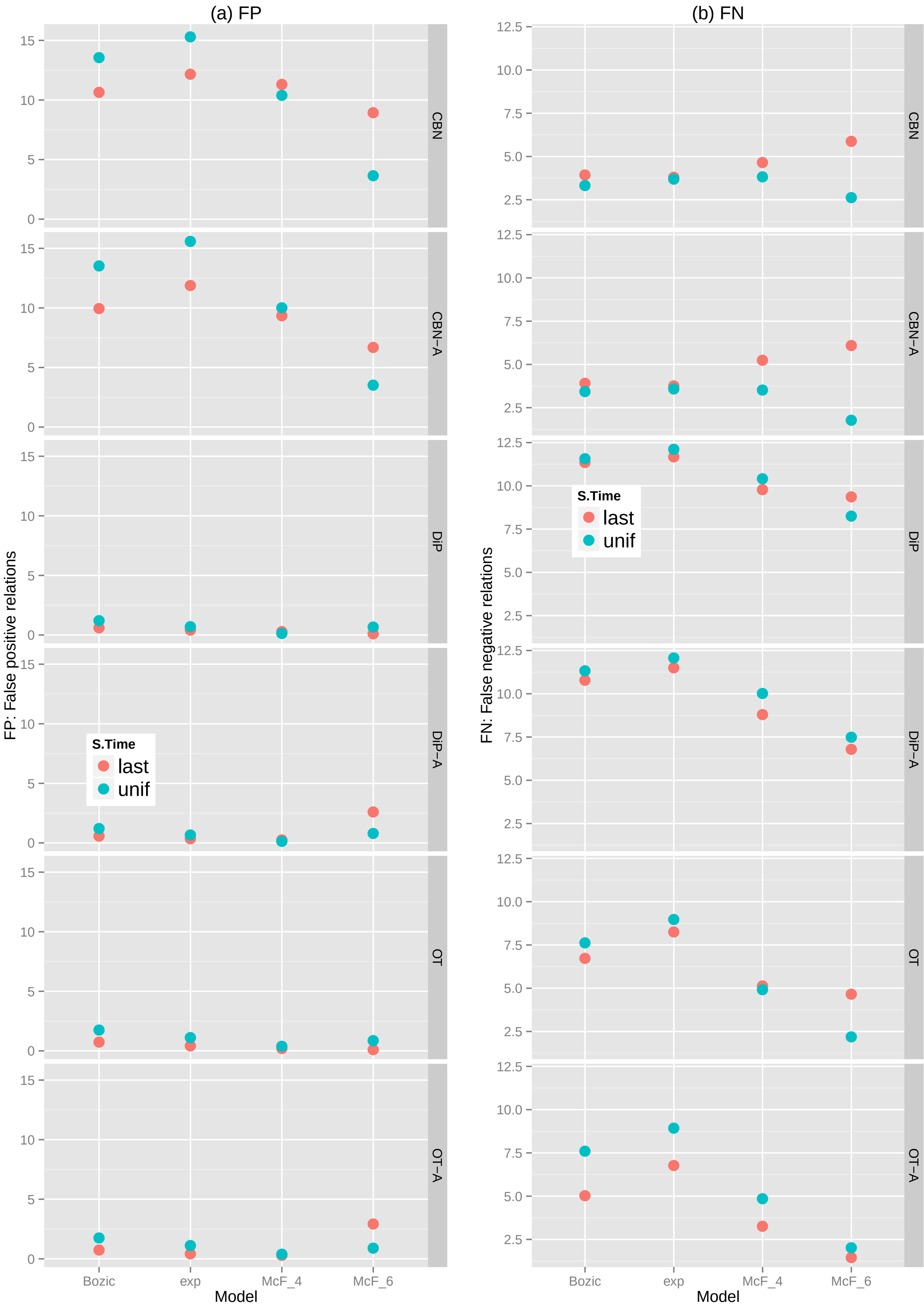
9.8 Filter by S.Type



Supplementary Figure 16: Mean of each metric for the different combinations of factors when Drivers Unknown.

9.9 FN and FP: S.Time, Method, Model with Drivers Known

The following figure shows that, even if there were three way interactions between Model, Method, and S.Time, they are of much smaller relevance than those between Model, Method, and sh, shown in the ms.



Supplementary Figure 17: Mean number of (a) false positive (FP) relations and (b) false negative (FN) relations, in the Drivers Known scenario, for the different combinations of Model, Method, and S.Time.

10 Overall ranking

10.1 Overall ranking: Drivers Known

Supplementary Table 3: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**1**	8	13
OT-A, last, wholeT_0.5	**2**	**2**	9	14
OT-A, last, wholeT_0.01	**3**	6	**2**	22
OT-A, unif, singleC	**4**	8	19	10
OT, unif, singleC	**5**	7	20	9
OT-A, unif, wholeT_0.5	6	10	21	15.5
OT, unif, wholeT_0.5	7	9	22	15.5
OT-A, unif, wholeT_0.01	8	11	12	24
OT, unif, wholeT_0.01	9	12	14	23
OT, last, singleC	10	**5**	23	**2**
OT, last, wholeT_0.01	11	**3**	18	18
OT, last, wholeT_0.5	12	**4**	24	**1**
CBN-A, unif, wholeT_0.01	13	13	**1**	26
CBN-A, unif, wholeT_0.5	14	17	**4**	33
CBN-A, unif, singleC	15	15	**5**	29
CBN, unif, singleC	16	18	6	31
CBN, unif, wholeT_0.5	17	19	7	32
CBN, unif, wholeT_0.01	18	14	**3**	27
CBN-A, last, wholeT_0.01	19	16	15	25
CBN, last, singleC	20	23	10	35
DiP-A, last, wholeT_0.01	21	22	25	21
CBN, last, wholeT_0.01	22	20	13	28
CBN-A, last, singleC	23	21	17	30
CBN-A, last, wholeT_0.5	24	24	16	34
CBN, last, wholeT_0.5	25	25	11	36
DiP-A, unif, wholeT_0.01	26	27	26	20
DiP, last, wholeT_0.01	27	29	29	11
DiP-A, last, singleC	28	26	27	17
DiP, unif, wholeT_0.01	29	31	30	19
DiP-A, last, wholeT_0.5	30	33	28	12
DiP-A, unif, singleC	31	30	31	6
DiP-A, unif, wholeT_0.5	32	35	32	7
DiP, last, singleC	33	28	34	8
DiP, last, wholeT_0.5	34	34	36	**5**
DiP, unif, singleC	35	32	33	**3**
DiP, unif, wholeT_0.5	36	36	35	**4**

10.1.1 Overall ranking: Drivers Known, conjunction

Supplementary Table 4: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**2**	14	10
OT-A, last, wholeT_0.5	**2**	**1**	15	12
OT-A, last, wholeT_0.01	**3**	**3**	7	22
OT-A, unif, singleC	**4**	6	19	13
OT, unif, singleC	**5**	**5**	20	11
OT-A, unif, wholeT_0.5	6	10	21	15.5
OT, unif, wholeT_0.5	7	8	22	15.5
OT-A, unif, wholeT_0.01	8	11	16	24
OT, unif, wholeT_0.01	9	12	17	23
OT, last, singleC	10	9	23	**1**
OT, last, wholeT_0.01	11	**4**	18	18
OT, last, wholeT_0.5	12	7	24	**2**
CBN-A, unif, wholeT_0.01	13	13	**1**	26
CBN-A, unif, singleC	14	16	**2**	28
CBN-A, unif, wholeT_0.5	15	18	**3**	34
CBN, unif, singleC	16	17	**5**	29
CBN, unif, wholeT_0.01	17	14	**4**	27
CBN, unif, wholeT_0.5	18	19	6	32
CBN-A, last, wholeT_0.01	19	15	12	25
CBN, last, singleC	20	22	10	35
CBN, last, wholeT_0.01	21	20	9	30
CBN-A, last, singleC	22	21	13	31
CBN-A, last, wholeT_0.5	23	23	11	33
CBN, last, wholeT_0.5	24	24	8	36
DiP-A, last, wholeT_0.01	25	26	25	21
DiP-A, unif, wholeT_0.01	26	25	26	20
DiP, last, wholeT_0.01	27	29	30	9
DiP, unif, wholeT_0.01	28	32	29	19
DiP-A, last, singleC	29	27	27	17
DiP-A, last, wholeT_0.5	30	33	28	14
DiP-A, unif, singleC	31	28	31	**4**
DiP-A, unif, wholeT_0.5	32	34	32	7
DiP, last, wholeT_0.5	33	35	34	**5**
DiP, last, singleC	34	30	35	8
DiP, unif, singleC	35	31	33	**3**
DiP, unif, wholeT_0.5	36	36	36	6

Supplementary Table 5: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. S.Size = 1000. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**4**	9	12
OT-A, last, wholeT_0.5	**2**	**5**	16	13
OT-A, last, wholeT_0.01	**3**	9	7	18
OT-A, unif, singleC	**4**	**2**	20	7.5
OT, unif, singleC	**5**	**1**	21	7.5
OT, unif, wholeT_0.5	6.5	6	23.5	9.5
OT-A, unif, wholeT_0.5	6.5	7	23.5	9.5
OT-A, unif, wholeT_0.01	8	12	17	24
OT, last, singleC	9	8	22	**2**
OT, last, wholeT_0.01	10	**3**	19	11
OT, unif, wholeT_0.01	11	11	18	23
DiP-A, last, wholeT_0.01	12	13	15	21
OT, last, wholeT_0.5	13	10	26	**1**
CBN-A, unif, wholeT_0.01	14	23	**1**	26
DiP, last, wholeT_0.01	15	16	29	15
DiP-A, unif, wholeT_0.01	16	14	28	20
CBN-A, unif, singleC	17	27	**3**	25
CBN, unif, singleC	18	26	**4**	29
CBN-A, unif, wholeT_0.5	19	28	6	28
CBN-A, last, wholeT_0.01	20	30	14	27
DiP-A, last, singleC	21	19	27	19
DiP-A, last, wholeT_0.5	22	21	25	17
CBN, unif, wholeT_0.01	23	29	**2**	30
CBN, unif, wholeT_0.5	24	31	**5**	33
DiP-A, unif, singleC	25	15	31	**4**
DiP, unif, wholeT_0.01	26	18	30	22
CBN, last, singleC	27	34	8	34
CBN, last, wholeT_0.01	28	33	10	32
DiP-A, unif, wholeT_0.5	29	20	32	**5**
CBN-A, last, singleC	30	32	11	31
DiP, last, wholeT_0.5	31	25	34	14
DiP, unif, singleC	32	17	33	**3**
DiP, last, singleC	33	22	35	16
CBN-A, last, wholeT_0.5	34	35	13	35
CBN, last, wholeT_0.5	35	36	12	36
DiP, unif, wholeT_0.5	36	24	36	6

Supplementary Table 6: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. S.Size = 200. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**2**	14	10
OT-A, last, wholeT_0.5	**2**	**1**	15	14
OT-A, last, wholeT_0.01	**3**	**3**	10	24
OT-A, unif, singleC	**4**	11	19	16.5
OT, unif, singleC	**5**	7	20	16.5
OT, unif, wholeT_0.5	6.5	6	21	12.5
OT-A, unif, wholeT_0.5	6.5	8	22	12.5
OT-A, unif, wholeT_0.01	8	9	16	22.5
OT, unif, wholeT_0.01	9	12	17	22.5
OT, last, singleC	10	10	23	**1**
OT, last, wholeT_0.5	11	**4**	24	**2**
OT, last, wholeT_0.01	12	**5**	18	18
CBN-A, unif, wholeT_0.5	13	16	**1**	35
CBN-A, unif, singleC	14	15	**2**	32
CBN-A, unif, wholeT_0.01	15	13	**3**	29
CBN, unif, wholeT_0.5	16	19	**5**	31
CBN, unif, singleC	17	17	6	28
CBN, unif, wholeT_0.01	18	18	**4**	27
CBN-A, last, wholeT_0.01	19	14	11	25
CBN-A, last, singleC	20	22	13	26
CBN, last, singleC	21	23	9	34
CBN-A, last, wholeT_0.5	22	21	12	33
CBN, last, wholeT_0.01	23	20	7	30
CBN, last, wholeT_0.5	24	24	8	36
DiP-A, unif, wholeT_0.01	25	25	26	20
DiP-A, last, wholeT_0.01	26	27	25	21
DiP, unif, wholeT_0.01	27	31	29	19
DiP-A, last, singleC	28	26	27	15
DiP-A, last, wholeT_0.5	29	33	28	11
DiP, last, wholeT_0.01	30	30	32	9
DiP-A, unif, singleC	31	28	30	8
DiP-A, unif, wholeT_0.5	32	34	31	6.5
DiP, last, singleC	33	29	35	**5**
DiP, unif, singleC	34.5	32	33.5	**4**
DiP, unif, wholeT_0.5	34.5	36	33.5	6.5
DiP, last, wholeT_0.5	36	35	36	**3**

Supplementary Table 7: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. S.Size = 100. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**3**	14	13
OT-A, last, wholeT_0.5	**2**	**2**	15	12
OT-A, last, wholeT_0.01	**3**	**1**	10	22
OT, unif, singleC	**4**	9	22	14
OT-A, unif, singleC	**5**	10	20	15
OT-A, unif, wholeT_0.5	6	12	19	16.5
OT, unif, wholeT_0.5	7	11	21	16.5
OT-A, unif, wholeT_0.01	8	6	17	23.5
OT, last, wholeT_0.01	9	**4**	16	19
OT, last, wholeT_0.5	10	**5**	24	**2.5**
OT, last, singleC	11	7	23	**4**
OT, unif, wholeT_0.01	12	8	18	23.5
CBN-A, unif, singleC	13	16	**2**	30
CBN-A, unif, wholeT_0.01	14	14	**1**	28
CBN, unif, wholeT_0.01	15	13	**4**	26
CBN-A, unif, wholeT_0.5	16	19	**3**	35
CBN, unif, singleC	17	18	**5**	32
CBN, unif, wholeT_0.5	18	20	6	33
CBN-A, last, wholeT_0.01	19	15	13	25
CBN, last, wholeT_0.01	20	17	9	27
CBN-A, last, wholeT_0.5	21	22	8	29
CBN, last, singleC	22	21	11	34
CBN, last, wholeT_0.5	23	24	7	36
CBN-A, last, singleC	24	23	12	31
DiP-A, unif, wholeT_0.01	25	28	25	20
DiP, last, wholeT_0.01	26	31	28	9
DiP, unif, wholeT_0.01	27	32	27	18
DiP-A, last, wholeT_0.01	28	29	26	21
DiP, last, singleC	29	26	30	**1**
DiP, last, wholeT_0.5	30	34	32.5	**2.5**
DiP-A, last, singleC	31	25	29	7
DiP-A, unif, singleC	33.5	27	31	8
DiP, unif, singleC	33.5	30	35	6
DiP-A, unif, wholeT_0.5	33.5	35	35	11
DiP, unif, wholeT_0.5	33.5	36	35	10
DiP-A, last, wholeT_0.5	36	33	32.5	**5**

10.1.2 Overall ranking: Drivers Known, no conjunction

Supplementary Table 8: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**3**	**2**	15
OT-A, last, wholeT_0.5	**2**	**4**	**3**	14
OT-A, last, wholeT_0.01	**3**	6	**1**	22
OT-A, unif, singleC	**4**	9	12.5	9.5
OT, unif, singleC	**5**	7	12.5	9.5
OT, unif, wholeT_0.5	6.5	8	15.5	12.5
OT-A, unif, wholeT_0.5	6.5	10	15.5	12.5
OT-A, unif, wholeT_0.01	8	11	**5**	24
OT, unif, wholeT_0.01	9	12	7	23
OT, last, singleC	10	**1**	17	**2**
OT, last, wholeT_0.5	11	**2**	23	**1**
OT, last, wholeT_0.01	12	**5**	14	18
CBN-A, unif, wholeT_0.01	13	13	**4**	26
CBN-A, unif, wholeT_0.5	14	16	8	31
CBN-A, unif, singleC	15	15	9	29
CBN, unif, wholeT_0.5	16	18	11	32
CBN, unif, singleC	17	19	10	34
CBN, unif, wholeT_0.01	18	14	6	27
CBN-A, last, wholeT_0.01	19	17	20	25
DiP-A, last, wholeT_0.01	20	20	25	21
CBN, last, singleC	21	28	18	35
CBN-A, last, wholeT_0.5	22	25	24	33
CBN, last, wholeT_0.01	23	21	21	28
CBN-A, last, singleC	24	23	22	30
DiP-A, unif, wholeT_0.01	25	26	26	20
CBN, last, wholeT_0.5	26	29	19	36
DiP, last, wholeT_0.01	27	27	29	16
DiP-A, last, singleC	28	22	27	17
DiP, unif, wholeT_0.01	29	31	30	19
DiP-A, last, wholeT_0.5	30	33	28	11
DiP-A, unif, singleC	31	30	31	6
DiP, last, singleC	32	24	34	7
DiP-A, unif, wholeT_0.5	33	35	32	8
DiP, last, wholeT_0.5	34	34	36	**5**
DiP, unif, singleC	35	32	33	**3**
DiP, unif, wholeT_0.5	36	36	35	**4**

Supplementary Table 9: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. S.Size = 1000. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	9	**2**	14
OT-A, last, wholeT_0.5	**2**	8	**3**	12
OT, unif, wholeT_0.5	**3.5**	**3**	7.5	7.5
OT-A, unif, wholeT_0.5	**3.5**	**4**	7.5	7.5
OT-A, last, wholeT_0.01	**5**	10	**1**	19
OT-A, unif, singleC	6	7	10.5	9.5
OT, unif, singleC	7	6	10.5	9.5
OT-A, unif, wholeT_0.01	8	11	**4**	24
DiP-A, last, wholeT_0.01	9	13	6	18
OT, unif, wholeT_0.01	10	12	**5**	23
OT, last, singleC	11	**2**	18	**2**
OT, last, wholeT_0.5	12	**1**	19	**1**
OT, last, wholeT_0.01	13	**5**	14	11
DiP, last, wholeT_0.01	14	14	28	13
DiP-A, last, singleC	15	17	21	20
DiP-A, last, wholeT_0.5	16	20	20	17
DiP-A, unif, wholeT_0.01	17	15	24	21
DiP-A, unif, singleC	18	19	30	**4**
DiP, last, singleC	19	16	35	16
DiP, unif, wholeT_0.01	20	18	31	22
CBN-A, unif, wholeT_0.5	21	27	12	29
CBN-A, unif, wholeT_0.01	22	24	9	26
DiP, last, wholeT_0.5	23	21	36	15
DiP-A, unif, wholeT_0.5	24	23	32	**5**
CBN-A, unif, singleC	25	28	13	28
CBN, unif, wholeT_0.5	26	29	17	30
DiP, unif, singleC	27	22	33	**3**
CBN-A, last, wholeT_0.01	28	30	25	25
DiP, unif, wholeT_0.5	29	25	34	6
CBN, unif, singleC	30	31	16	33
CBN, unif, wholeT_0.01	31	26	15	27
CBN-A, last, singleC	32	33	26	31
CBN, last, wholeT_0.5	33	34	22	36
CBN-A, last, wholeT_0.5	34	35	27	34
CBN, last, singleC	35	36	23	35
CBN, last, wholeT_0.01	36	32	29	32

Supplementary Table 10: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. S.Size = 200. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**2.5**	**2**	13.5
OT-A, last, wholeT_0.5	**2**	**2.5**	**4**	13.5
OT-A, last, wholeT_0.01	**3**	6	**1**	21
OT, unif, singleC	**4**	7	14.5	6.5
OT-A, unif, singleC	**5**	8	14.5	6.5
OT, unif, wholeT_0.5	6.5	10	22.5	11.5
OT-A, unif, wholeT_0.5	6.5	12	22.5	11.5
OT-A, unif, wholeT_0.01	8	9	10	23.5
OT, unif, wholeT_0.01	9	11	11	23.5
OT, last, singleC	10	**1**	18	**1.5**
OT, last, wholeT_0.5	11	**5**	24	**1.5**
OT, last, wholeT_0.01	12	**4**	12	17
CBN-A, unif, wholeT_0.01	13	13	**3**	30
CBN-A, unif, singleC	14	15	8	29
CBN-A, unif, wholeT_0.5	15	16	7	31
CBN, unif, singleC	16	17	6	32
CBN, unif, wholeT_0.5	17	19	9	34
CBN, unif, wholeT_0.01	18	14	**5**	27
CBN-A, last, wholeT_0.01	19	18	17	25
CBN, last, singleC	20	22	19	35
CBN, last, wholeT_0.01	21	20	16	26
CBN-A, last, wholeT_0.5	22	23	21	33
CBN, last, wholeT_0.5	23	24	13	36
CBN-A, last, singleC	24	21	20	28
DiP-A, last, wholeT_0.01	25	25	25	22
DiP-A, unif, wholeT_0.01	26	27	26	20
DiP-A, last, singleC	27	26	27	18
DiP, unif, wholeT_0.01	28	31	29	19
DiP-A, last, wholeT_0.5	29	32	28	15
DiP, last, wholeT_0.01	30	29	30	16
DiP-A, unif, singleC	31	30	31	9
DiP-A, unif, wholeT_0.5	32	35	32	10
DiP, last, singleC	33	28	33	8
DiP, last, wholeT_0.5	34	34	34	**3**
DiP, unif, singleC	35	33	36	**5**
DiP, unif, wholeT_0.5	36	36	35	**4**

Supplementary Table 11: Overall ranking of all 36 combinations of method and sampling when Drivers are Known with respect to each performance metric. S.Size = 100. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 5 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
OT-A, last, singleC	**1**	**1**	**2**	11
OT-A, last, wholeT_0.5	**2**	**2**	**5**	12
OT-A, last, wholeT_0.01	**3**	**5**	**1**	22
OT-A, unif, singleC	**4**	11	19.5	14.5
OT, unif, singleC	**5**	9	19.5	14.5
OT, unif, wholeT_0.5	6.5	10	22.5	16.5
OT-A, unif, wholeT_0.5	6.5	12	22.5	16.5
OT-A, unif, wholeT_0.01	8	7	10	23.5
OT, unif, wholeT_0.01	9	8	11	23.5
OT, last, wholeT_0.5	10	**4**	24	**2.5**
OT, last, singleC	11	**3**	21	**4**
OT, last, wholeT_0.01	12	6	15	18
CBN-A, unif, wholeT_0.5	13	18	8	32
CBN-A, unif, wholeT_0.01	14	13	**4**	26
CBN-A, unif, singleC	15	16	6	31
CBN, unif, wholeT_0.5	16	19	7	33
CBN, unif, singleC	17	20	9	34
CBN, unif, wholeT_0.01	18	14	**3**	29
CBN-A, last, wholeT_0.01	19	15	18	25
CBN, last, singleC	20	22	12	36
CBN-A, last, wholeT_0.5	21	21	17	28
CBN, last, wholeT_0.01	22	17	13	27
CBN-A, last, singleC	23	23	16	30
CBN, last, wholeT_0.5	24	24	14	35
DiP-A, unif, wholeT_0.01	25	30	25	20
DiP-A, last, wholeT_0.01	26	27	26	21
DiP, last, wholeT_0.01	27	31	28	10
DiP, unif, wholeT_0.01	28	32	27	19
DiP, last, singleC	29	26	32	**1**
DiP-A, unif, singleC	30	28	31	9
DiP-A, unif, wholeT_0.5	31	35	29	13
DiP, last, wholeT_0.5	32	34	35.5	**2.5**
DiP, unif, wholeT_0.5	33	36	34	8
DiP, unif, singleC	34	29	33	7
DiP-A, last, wholeT_0.5	35	33	35.5	**5**
DiP-A, last, singleC	36	25	30	6

10.2 Overall ranking: Drivers Unknown

Supplementary Table 12: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S5, OT-A, last, singleC	**1**	**8**	13	60
S5, OT-A, last, wholeT_0.5	**2**	**6**	23	59
S5, OT-A, last, wholeT_0.01	**3**	**4**	**4**	94
J5, OT-A, last, wholeT_0.01	**4**	**1**	29	71
J1, OT-A, last, singleC	**5**	14	37	76
S5, OT-A, unif, wholeT_0.01	**6**	17	33	70
J1, OT-A, last, wholeT_0.5	**7**	**7**	39	75
S5, OT, unif, singleC	**8**	41	58.5	25
S5, OT-A, unif, singleC	**9**	50	58.5	28
S5, OT, unif, wholeT_0.01	**10**	**9**	34	69
S5, OT, unif, wholeT_0.5	11	28	65	30.5
S5, OT-A, unif, wholeT_0.5	12	47	64	30.5
S1, OT-A, last, wholeT_0.5	13	31	**3**	116
J1, OT-A, last, wholeT_0.01	14	19	**9**	109
S1, OT-A, unif, wholeT_0.5	15	38	18	102
S1, OT, unif, wholeT_0.5	16	23	20	101
S1, OT-A, last, singleC	17	34	**2**	120
S1, OT, unif, singleC	18	24	12	106
S1, OT-A, unif, singleC	19	35	11	107
J1, OT-A, unif, singleC	20	30	63	40
J1, OT, unif, singleC	21	18	66	35
S5, OT, last, singleC	22	13	45	20
S5, OT, last, wholeT_0.5	23	**3**	52	17
J5, OT-A, last, singleC	24	33	55	46
J1, OT-A, unif, wholeT_0.5	25	26	69.5	45
J1, OT, unif, wholeT_0.5	26	11	69.5	44
J5, OT-A, last, wholeT_0.5	27	29	56	43
J1, OT-A, unif, wholeT_0.01	28	16	35	92
J1, OT, unif, wholeT_0.01	29	12	36	91
S1, OT-A, last, wholeT_0.01	30	49	**1**	134
S5, DiP-A, unif, wholeT_0.5	31	137	122	29
S5, DiP-A, unif, singleC	32	117	120	26
J5, OT-A, unif, wholeT_0.01	33	63	94	38.5
J5, OT, last, wholeT_0.01	34	**5**	61	37
S5, OT, last, wholeT_0.01	35	**2**	27	82
J5, OT, unif, wholeT_0.01	36	53	95	38.5
S5, CBN-A, unif, wholeT_0.01	37	15	38	93
S5, CBN-A, unif, singleC	38	43	71	83
S5, DiP, unif, wholeT_0.5	39	143	128	19
J1, OT, last, singleC	40	27	83	58
S5, DiP-A, unif, wholeT_0.01	41	106	86	67
J1, OT, last, wholeT_0.5	42	**10**	87	54
S5, DiP, unif, singleC	43	123	129	16
J1, CBN-A, unif, singleC	44	37	74	74
S5, CBN-A, unif, wholeT_0.5	45	45	73	84
J1, CBN-A, unif, wholeT_0.5	46	39	77	68
J5, DiP-A, unif, wholeT_0.01	47	129	133	33
J1, OT, last, wholeT_0.01	48	20	40	97
J5, DiP-A, unif, singleC	49	128	138	**9**
S5, DiP, unif, wholeT_0.01	50	120	98	66

Supplementary Table 12: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, DiP, unif, wholeT_0.01	51	139	142	32
J5, OT, last, singleC	52	40	103	**4**
S1, OT, last, wholeT_0.5	53	32	28	110
J5, DiP-A, last, singleC	54	108	121	34
J5, DiP-A, unif, wholeT_0.5	55	141	141	11
J1, DiP-A, unif, singleC	56	118	127	27
S1, OT, last, singleC	57	44	25	111
J1, DiP-A, unif, wholeT_0.5	58	138	130	23
J5, DiP-A, last, wholeT_0.5	59	130	125	36
J5, DiP-A, last, wholeT_0.01	60	105	88	73
S5, CBN, unif, wholeT_0.01	61	22	46	104
J5, DiP, unif, singleC	62	132	143	**8**
J5, OT-A, unif, singleC	63	80	115	14.5
J5, DiP, unif, wholeT_0.5	64	144	144	**4**
J5, OT, unif, singleC	65	70	116	14.5
J1, CBN, unif, singleC	66	46	89	81
J5, OT, last, wholeT_0.5	67	21	105	**4**
S5, CBN, unif, singleC	68	52	82	88
J1, CBN-A, unif, wholeT_0.01	69	25	41	108
S5, DiP-A, last, wholeT_0.5	70	125	92	49
J1, CBN, unif, wholeT_0.5	71	36	93	77
S5, DiP-A, last, singleC	72	100	81	51
J5, OT-A, unif, wholeT_0.5	73	75	118	21.5
J1, DiP, unif, singleC	74	124	136	18
J5, OT, unif, wholeT_0.5	75	57	119	21.5
S5, CBN, unif, wholeT_0.5	76	48	90	87
J1, DiP-A, last, singleC	77	104	108	42
J1, DiP-A, last, wholeT_0.5	78	127	110	47
J1, DiP, unif, wholeT_0.5	79	142	137	13
J5, DiP, last, singleC	80	119	140	**4**
J5, DiP, last, wholeT_0.5	81	136	139	**4**
J1, DiP-A, unif, wholeT_0.01	82	103	96	80
S1, OT, last, wholeT_0.01	83	51	17	132
S5, DiP, last, wholeT_0.5	84	131	113	**10**
S1, OT-A, unif, wholeT_0.01	85	61	**5**	136
J5, CBN-A, unif, wholeT_0.01	86	73	100	85
J5, CBN-A, last, wholeT_0.01	87	55	50	114
J5, CBN-A, unif, singleC	88	85	124	56
J5, CBN-A, unif, wholeT_0.5	89	87	123	53
S1, OT, unif, wholeT_0.01	90	59	**6**	135
S5, DiP, last, singleC	91	109	112	12
J1, DiP, last, wholeT_0.5	92	133	135	**4**
J1, DiP, last, singleC	93	114	134	**4**
J1, CBN, unif, wholeT_0.01	94	42	49	113
J1, DiP, unif, wholeT_0.01	95	111	111	78
J5, DiP, last, wholeT_0.01	96	121	126	24
S5, DiP-A, last, wholeT_0.01	97	96	54	89
J5, CBN, unif, wholeT_0.01	98	90	109	86
J5, CBN-A, last, wholeT_0.5	99	93	80	103
J1, DiP-A, last, wholeT_0.01	100	101	67	90

Supplementary Table 12: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, CBN, unif, singleC	101	99	131	62
J5, CBN-A, last, singleC	102	81	84	105
J5, CBN, unif, wholeT_0.5	103	84	132	61
J1, CBN-A, last, singleC	104	72	62	119
J5, CBN, last, singleC	105	78	99	99
J5, CBN, last, wholeT_0.5	106	76	101	96
J5, CBN, last, wholeT_0.01	107	67	60	112
S1, CBN-A, unif, wholeT_0.5	108	64	31	125
J1, CBN-A, last, wholeT_0.5	109	74	68	118
J1, CBN, last, singleC	110	66	72	117
S1, CBN-A, unif, singleC	111	60	24	128
S1, DiP-A, unif, wholeT_0.5	112	135	104	57
J1, CBN, last, wholeT_0.5	113	68	76	115
S1, CBN, unif, wholeT_0.5	114	56	32	126
S1, DiP-A, unif, singleC	115	115	97	55
S5, CBN, last, singleC	116	58	44	123
S5, CBN, last, wholeT_0.5	117	54	47	122
S1, DiP, unif, wholeT_0.5	118	140	117	50
S5, CBN-A, last, singleC	119	62	48	124
S1, CBN, unif, singleC	120	65	30	129
S5, CBN-A, last, wholeT_0.5	121	69	51	121
S5, DiP, last, wholeT_0.01	122	113	91	65
J1, DiP, last, wholeT_0.01	123	116	107	64
S1, DiP, unif, singleC	124	122	114	48
J1, CBN-A, last, wholeT_0.01	125	79	42	127
S5, CBN-A, last, wholeT_0.01	126	71	22	131
S1, DiP-A, last, wholeT_0.01	127	97	53	95
S1, DiP-A, last, wholeT_0.5	128	126	79	63
J1, CBN, last, wholeT_0.01	129	83	43	130
S1, DiP-A, last, singleC	130	102	75	72
S5, CBN, last, wholeT_0.01	131	77	26	133
S1, DiP-A, unif, wholeT_0.01	132	98	57	100
S1, DiP, last, wholeT_0.5	133	134	106	41
S1, DiP, last, wholeT_0.01	134	112	85	79
S1, DiP, last, singleC	135	107	102	52
S1, DiP, unif, wholeT_0.01	136	110	78	98
S1, CBN-A, last, wholeT_0.5	137	91	21	138
S1, CBN-A, unif, wholeT_0.01	138	82	**7**	143
S1, CBN-A, last, singleC	139	86	19	141
S1, CBN-A, last, wholeT_0.01	140	94	**10**	137
S1, CBN, last, wholeT_0.5	141	89	15	139
S1, CBN, last, singleC	142	92	16	142
S1, CBN, unif, wholeT_0.01	143	88	**8**	144
S1, CBN, last, wholeT_0.01	144	95	14	140

10.2.1 Overall ranking: Drivers Unknown, conjunction

Supplementary Table 13: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S5, OT-A, last, singleC	**1**	**7**	15	60
S5, OT-A, last, wholeT_0.5	**2**	**6**	23	59
J5, OT-A, last, wholeT_0.01	**3**	**1**	26	71
S5, OT-A, last, wholeT_0.01	**4**	**2**	**2**	94
S5, OT-A, unif, wholeT_0.01	**5**	17	33	69
S5, OT, unif, singleC	**6**	41	61.5	28
S5, OT-A, unif, singleC	**7**	50	61.5	31
J1, OT-A, last, singleC	**8**	15	38	80
J1, OT-A, last, wholeT_0.5	**9**	**10**	39	79
S5, OT-A, unif, wholeT_0.5	**10**	47	67	29.5
S5, OT, unif, wholeT_0.01	11	11	34	68
S5, OT, unif, wholeT_0.5	12	30	70	29.5
J1, OT-A, last, wholeT_0.01	13	21	**9**	109
S1, OT-A, unif, wholeT_0.5	14	40	17	102
S1, OT, unif, wholeT_0.5	15	23	18	101
S1, OT, unif, singleC	16	22	12	104
S1, OT-A, unif, singleC	17	34	11	106
S1, OT-A, last, wholeT_0.5	18	39	**3**	117
J1, OT, unif, singleC	19	18	63	40
J1, OT-A, unif, singleC	20	32	60	46
S1, OT-A, last, singleC	21	38	**4**	120
J5, OT-A, last, singleC	22	26	53	43.5
S5, OT, last, singleC	23	16	51	21
S5, OT, last, wholeT_0.5	24	**3**	55	16
J5, OT-A, last, wholeT_0.5	25	24	54	43.5
J1, OT-A, unif, wholeT_0.5	26	28	68.5	45
J1, OT, unif, wholeT_0.5	27	13	68.5	42
J1, OT-A, unif, wholeT_0.01	28	12	35	92
J1, OT, unif, wholeT_0.01	29	**9**	36	91
S5, CBN-A, unif, wholeT_0.01	30	**4**	37	89
J5, OT, last, wholeT_0.01	31	**5**	59	32
S5, DiP-A, unif, wholeT_0.5	32	136	125	20
S5, DiP-A, unif, singleC	33	118	124	23
J5, OT-A, unif, wholeT_0.01	34	60	92	36.5
S5, CBN-A, unif, singleC	35	29	66	77
S1, OT-A, last, wholeT_0.01	36	48	**1**	134
J5, OT, unif, wholeT_0.01	37	55	94	36.5
S5, OT, last, wholeT_0.01	38	**8**	29	83
S5, CBN-A, unif, wholeT_0.5	39	42	75	78
S5, DiP-A, unif, wholeT_0.01	40	102	86	64
S5, DiP, unif, wholeT_0.5	41	143	130	14
J1, CBN-A, unif, singleC	42	33	71	72
J1, CBN-A, unif, wholeT_0.5	43	37	74	70
S5, DiP, unif, singleC	44	124	131	22
J5, DiP-A, unif, wholeT_0.01	45	126	129	35
J1, OT, last, singleC	46	31	88	62
J1, OT, last, wholeT_0.5	47	14	89	61
J5, OT, last, singleC	48	35	101	**4**
J5, DiP-A, unif, singleC	49	125	139	10.5
S5, DiP, unif, wholeT_0.01	50	120	103	63

Supplementary Table 13: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, DiP-A, last, singleC	51	105	112	34
J1, OT, last, wholeT_0.01	52	27	42	99
J1, DiP-A, unif, singleC	53	117	126	26
J5, DiP, unif, wholeT_0.01	54	138	142	33
J5, DiP-A, unif, wholeT_0.5	55	140	141	10.5
J1, DiP-A, unif, wholeT_0.5	56	133	128	27
J5, OT, last, wholeT_0.5	57	20	102	**4**
S5, CBN, unif, wholeT_0.01	58	19	47	97
J5, DiP-A, last, wholeT_0.5	59	130	113	39
J1, CBN, unif, singleC	60	46	81	84
J5, DiP, unif, singleC	61	131	143	**8**
J1, CBN-A, unif, wholeT_0.01	62	25	40	108
S5, CBN, unif, singleC	63	54	82	88
J5, DiP, unif, wholeT_0.5	64	144	144	**4**
J5, OT, unif, singleC	65.5	69	114.5	17.5
J5, OT-A, unif, singleC	65.5	80	114.5	17.5
J5, DiP-A, last, wholeT_0.01	67	107	83	73
J1, CBN, unif, wholeT_0.5	68	36	85	75
S5, CBN, unif, wholeT_0.5	69	45	91	87
J1, DiP, unif, singleC	70	123	136	19
J1, DiP, unif, wholeT_0.5	71	142	137	15
S5, DiP-A, last, wholeT_0.5	72	127	96	51
S5, DiP-A, last, singleC	73	100	87	50
J5, OT-A, unif, wholeT_0.5	74	77	117.5	24.5
J5, OT, unif, wholeT_0.5	75	59	117.5	24.5
S1, OT, last, wholeT_0.5	76	43	31	110
J1, DiP-A, last, singleC	77	104	106	47
J1, DiP-A, unif, wholeT_0.01	78	98	93	81
J5, DiP, last, singleC	79	115	140	**4**
J1, DiP-A, last, wholeT_0.5	80	128	108	53
S1, OT, last, singleC	81	49	30	113
J5, DiP, last, wholeT_0.5	82	137	138	**4**
S5, DiP, last, wholeT_0.5	83	134	120	**9**
S1, OT, last, wholeT_0.01	84	51	20	132
J5, CBN-A, unif, wholeT_0.5	85	89	123	52
J5, CBN-A, unif, singleC	86	85	121	56
J5, CBN-A, unif, wholeT_0.01	87	72	99	85
J1, CBN, unif, wholeT_0.01	88	44	43	111
S5, DiP, last, singleC	89	113	119	12
J1, DiP, unif, wholeT_0.01	90	109	109	76
J1, DiP, last, wholeT_0.5	91	132	134	**4**
J1, DiP, last, singleC	92	110	135	**4**
J5, CBN-A, last, wholeT_0.01	93	57	50	114
J5, DiP, last, wholeT_0.01	94	121	127	13
J5, CBN-A, last, wholeT_0.5	95	95	76	105
J5, CBN, unif, wholeT_0.01	96	91	104	86
J5, CBN, unif, wholeT_0.5	97	83	133	57
J5, CBN, unif, singleC	98	96	132	58
J5, CBN-A, last, singleC	99	78	78	107
J1, CBN-A, last, singleC	100	73	58	119

Supplementary Table 13: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
S1, CBN-A, unif, wholeT_0.5	101	63	28	126
S1, OT-A, unif, wholeT_0.01	102	65	**5**	136
J5, CBN, last, wholeT_0.01	103	71	64	112
S1, CBN-A, unif, singleC	104	58	22	127
S5, DiP-A, last, wholeT_0.01	105	99	56	90
J5, CBN, last, singleC	106	79	97	103
J5, CBN, last, wholeT_0.5	107	75	98	98
J1, CBN-A, last, wholeT_0.5	108	76	65	118
S1, OT, unif, wholeT_0.01	109	62	**6**	135
J1, CBN, last, singleC	110	70	73	116
J1, DiP-A, last, wholeT_0.01	111	106	72	93
S5, CBN-A, last, wholeT_0.5	112	67	48	122
S1, DiP-A, unif, wholeT_0.5	113	135	105	55
S1, CBN, unif, wholeT_0.5	114	56	32	124
S5, CBN, last, wholeT_0.5	115	52	46	121
S5, CBN, last, singleC	116	53	45	123
S5, CBN-A, last, singleC	117	61	44	125
J1, CBN, last, wholeT_0.5	118	68	77	115
S1, DiP-A, unif, singleC	119	112	100	48
S1, DiP, unif, wholeT_0.5	120	141	122	49
S1, CBN, unif, singleC	121	66	27	128
S5, DiP, last, wholeT_0.01	122	114	95	66
S1, DiP, unif, singleC	123	122	116	38
J1, DiP, last, wholeT_0.01	124	119	110	65
J1, CBN-A, last, wholeT_0.01	125	81	41	129
S5, CBN-A, last, wholeT_0.01	126	64	19	130
S1, DiP-A, last, wholeT_0.01	127	101	52	96
J1, CBN, last, wholeT_0.01	128	88	49	131
S1, DiP-A, last, wholeT_0.5	129	129	84	67
S1, DiP-A, last, singleC	130	103	80	74
S5, CBN, last, wholeT_0.01	131	74	25	133
S1, DiP-A, unif, wholeT_0.01	132	97	57	100
S1, DiP, last, wholeT_0.5	133	139	111	41
S1, DiP, last, wholeT_0.01	134	116	90	82
S1, DiP, last, singleC	135	111	107	54
S1, DiP, unif, wholeT_0.01	136	108	79	95
S1, CBN-A, unif, wholeT_0.01	137	82	**7**	143
S1, CBN-A, last, wholeT_0.5	138	92	24	140
S1, CBN-A, last, singleC	139	86	21	141
S1, CBN, last, wholeT_0.5	140	87	14	138
S1, CBN, last, singleC	141	90	16	142
S1, CBN-A, last, wholeT_0.01	142	93	**10**	137
S1, CBN, unif, wholeT_0.01	143	84	**8**	144
S1, CBN, last, wholeT_0.01	144	94	13	139

Supplementary Table 14: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. S.Size = 1000. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S1, OT, unif, singleC	**1.5**	**3**	18.5	50.5
S1, OT-A, unif, singleC	**1.5**	**6**	18.5	50.5
S1, OT, unif, wholeT_0.5	**3.5**	**4**	27.5	57.5
S1, OT-A, unif, wholeT_0.5	**3.5**	17	27.5	57.5
S5, OT-A, last, singleC	**5**	25	20	53.5
S5, OT-A, last, wholeT_0.5	**6**	18	30	53.5
S5, OT-A, last, wholeT_0.01	**7**	16	**3**	96
S5, DiP-A, last, wholeT_0.5	**8**	75	38	67
S5, DiP-A, unif, wholeT_0.01	**9**	47	50	66
S5, DiP-A, unif, wholeT_0.5	**10**	107	90	13
S1, DiP-A, unif, singleC	11	68	47	44
J1, OT-A, last, wholeT_0.01	12	28	12	104
S5, DiP-A, last, singleC	13	61	34	69
S5, DiP-A, unif, singleC	14	85	87	26
S1, OT-A, last, wholeT_0.5	15	36	**6**	99
J5, OT-A, last, wholeT_0.01	16	**9**	35	77
S1, OT-A, last, singleC	17	40	**4**	107
S5, DiP-A, last, wholeT_0.01	18	37	**8**	100
J5, DiP-A, last, wholeT_0.01	19	41	42	86
J1, OT-A, last, wholeT_0.5	20.5	11	51.5	48.5
J1, OT-A, last, singleC	20.5	15	51.5	48.5
S5, OT, unif, wholeT_0.01	22.5	**10**	45.5	72
S5, OT-A, unif, wholeT_0.01	22.5	27	45.5	72
S5, OT, unif, singleC	24.5	42	88.5	13
S5, OT-A, unif, singleC	24.5	65	88.5	13
S1, DiP-A, unif, wholeT_0.5	26	90	62	45
J1, DiP-A, last, wholeT_0.01	27	43	14	102
S5, OT, unif, wholeT_0.5	28.5	29	93.5	13
S5, OT-A, unif, wholeT_0.5	28.5	52	93.5	13
S5, DiP, unif, wholeT_0.01	30	72	67	72
S5, DiP, unif, wholeT_0.5	31	127	108	13
J1, OT, unif, wholeT_0.01	32.5	**1**	48.5	75.5
J1, OT-A, unif, wholeT_0.01	32.5	**2**	48.5	75.5
S5, DiP, last, wholeT_0.5	34	80	75	13
S5, DiP, unif, singleC	35	97	109	32.5
J1, DiP-A, unif, wholeT_0.01	36	20	58	81
J1, DiP-A, unif, singleC	37	84	98	32.5
S5, DiP, last, singleC	38	57	78	27
J1, DiP-A, last, singleC	39.5	60	69.5	61.5
J1, DiP-A, last, wholeT_0.5	39.5	76	69.5	61.5
S5, OT, last, singleC	41	26	64	13
S1, DiP, unif, singleC	42	86	72	39
S1, CBN-A, unif, wholeT_0.5	43	66	40	110
S5, OT, last, wholeT_0.5	44	**8**	74	13
J1, DiP-A, unif, wholeT_0.5	45	102	110	32.5
S1, CBN-A, unif, singleC	46	46	31	108
S1, DiP, unif, wholeT_0.5	47	122	79	52
J1, OT, unif, singleC	48.5	21	91.5	32.5
J1, OT-A, unif, singleC	48.5	33	91.5	32.5
J5, DiP-A, last, singleC	50	78	82.5	59.5

Supplementary Table 14: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J1, DiP, unif, wholeT_0.01	51	34	80	80
J5, OT-A, last, singleC	52	38	76.5	46.5
J5, DiP-A, last, wholeT_0.5	53	92	82.5	59.5
S5, OT, last, wholeT_0.01	54	13	32	79
J1, DiP, unif, singleC	55	94	121	32.5
J5, OT-A, last, wholeT_0.5	56	32	76.5	46.5
S1, OT-A, last, wholeT_0.01	57	91	**1**	132
J1, OT, last, wholeT_0.01	58	23	57	87
J1, DiP, last, wholeT_0.5	59	77	116	13
J1, OT, unif, wholeT_0.5	60.5	12	100.5	32.5
J1, OT-A, unif, wholeT_0.5	60.5	31	100.5	32.5
S5, DiP, last, wholeT_0.01	62	64	43	84
J1, DiP, unif, wholeT_0.5	63	124	124	32.5
J5, OT, last, wholeT_0.01	64	**5**	85	38
J1, DiP, last, singleC	65	53	117	13
S1, CBN, unif, wholeT_0.5	66	45	44	105
S1, CBN, unif, singleC	67	70	37	113
S5, CBN-A, unif, wholeT_0.01	68	14	55	93
J5, DiP, last, wholeT_0.01	69	50	99	32.5
J1, CBN-A, unif, wholeT_0.01	70	19	53	97
S5, CBN-A, unif, singleC	71	48	96	88
J1, DiP, last, wholeT_0.01	72	51	73	74
J5, DiP-A, unif, wholeT_0.01	73	121	128	41.5
S5, CBN-A, unif, wholeT_0.5	74	54	102	85
S1, OT, last, wholeT_0.5	75	44	39	90
J1, OT, last, singleC	76	24	111	13
S1, OT, last, singleC	77	69	36	95
J5, DiP, last, wholeT_0.5	78	98	127	13
J5, DiP, last, singleC	79	79	130	13
S1, DiP-A, last, wholeT_0.01	80	56	**2**	118
J1, OT, last, wholeT_0.5	81	**7**	113	13
J5, OT, unif, wholeT_0.01	82.5	74	114.5	41.5
J5, OT-A, unif, wholeT_0.01	82.5	87	114.5	41.5
S1, DiP-A, last, wholeT_0.5	84	83	25	89
S1, DiP-A, last, singleC	85	55	16	92
J5, DiP-A, unif, singleC	86	134	133	13
J1, CBN-A, unif, singleC	87	49	106	68
J5, DiP-A, unif, wholeT_0.5	88	141	137	13
J5, DiP, unif, wholeT_0.01	89	143	140	41.5
J1, CBN-A, unif, wholeT_0.5	90	62	107	63
J5, OT, last, singleC	91	39	123	13
J5, DiP, unif, wholeT_0.5	92	144	142	13
J5, DiP, unif, singleC	93	142	141	13
S1, OT, last, wholeT_0.01	94	96	21	126
S5, CBN, unif, wholeT_0.01	95	35	65	109
J5, OT, last, wholeT_0.5	96	22	125	13
S1, DiP, last, wholeT_0.5	97	93	61	78
J1, CBN, unif, wholeT_0.01	98	30	59	111
J1, CBN, unif, singleC	99	71	118	83
S1, OT, unif, wholeT_0.01	100.5	110	**7**	135

Supplementary Table 14: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
S1, OT-A, unif, wholeT_0.01	100.5	112	**5**	136
S1, DiP, last, wholeT_0.01	102	59	33	103
J5, OT, unif, singleC	103.5	89	133	13
J5, OT-A, unif, singleC	103.5	114	133	13
S5, CBN, unif, singleC	105	88	112	101
S1, DiP-A, unif, wholeT_0.01	106	58	**10**	112
J1, CBN, unif, wholeT_0.5	107	63	120	70
J5, OT, unif, wholeT_0.5	108.5	81	137	13
J5, OT-A, unif, wholeT_0.5	108.5	99	137	13
S5, CBN, unif, wholeT_0.5	110	73	119	98
S1, DiP, last, singleC	111	67	56	82
J5, CBN-A, unif, singleC	112	118	135	55.5
J1, CBN-A, last, singleC	113	105	84	123
J5, CBN-A, last, wholeT_0.01	114	95	68	124
J1, CBN-A, last, wholeT_0.5	115	111	86	122
J5, CBN-A, unif, wholeT_0.01	116	113	126	91
J5, CBN-A, unif, wholeT_0.5	117	128	139	55.5
J5, CBN-A, last, wholeT_0.5	118	126	95	115
S5, CBN-A, last, wholeT_0.5	119	115	63	129
J1, CBN, last, singleC	120	103	105	120
J5, CBN-A, last, singleC	121	117	103	117
S1, DiP, unif, wholeT_0.01	122	82	26	114
J1, CBN, last, wholeT_0.5	123	104	104	121
S5, CBN-A, last, singleC	124	108	60	131
J5, CBN, last, wholeT_0.5	125	109	122	106
J5, CBN, last, wholeT_0.01	126	116	97	119
J5, CBN, unif, singleC	127	138	143	64.5
J5, CBN, last, singleC	128	131	129	116
S5, CBN, last, singleC	129	101	71	130
J1, CBN-A, last, wholeT_0.01	130	120	54	125
J5, CBN, unif, wholeT_0.5	131	119	144	64.5
J5, CBN, unif, wholeT_0.01	132	137	131	94
S5, CBN, last, wholeT_0.5	133	100	66	127
S5, CBN-A, last, wholeT_0.01	134	106	29	133
S1, CBN-A, last, wholeT_0.5	135	130	17	139
J1, CBN, last, wholeT_0.01	136	136	81	128
S1, CBN-A, unif, wholeT_0.01	137	132	**9**	143
S1, CBN-A, last, singleC	138	125	22	141
S5, CBN, last, wholeT_0.01	139	133	41	134
S1, CBN, last, wholeT_0.5	140	123	23	140
S1, CBN, last, singleC	141	129	24	142
S1, CBN, unif, wholeT_0.01	142	135	11	144
S1, CBN, last, wholeT_0.01	143	140	15	138
S1, CBN-A, last, wholeT_0.01	144	139	13	137

Supplementary Table 15: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. S.Size = 200. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S5, OT-A, last, singleC	**1**	11	15	51
S5, OT-A, last, wholeT_0.5	**2**	12	21	50
J5, OT-A, last, wholeT_0.01	**3**	**1**	24	71
J1, OT-A, last, wholeT_0.5	**4**	**6**	39	67
S5, OT-A, last, wholeT_0.01	**5**	**2**	**3**	98
S5, OT-A, unif, wholeT_0.01	**6**	17	33.5	68.5
J1, OT-A, last, singleC	**7**	14	38	75
S5, OT, unif, singleC	**8.5**	32	57.5	37.5
S5, OT-A, unif, singleC	**8.5**	47	57.5	37.5
S5, OT, unif, wholeT_0.01	**10**	13	33.5	68.5
S5, OT, unif, wholeT_0.5	11.5	28	68.5	33.5
S5, OT-A, unif, wholeT_0.5	11.5	49	68.5	33.5
J1, OT-A, last, wholeT_0.01	13	18	**9**	106
S1, OT-A, unif, wholeT_0.5	14	58	19	108
S1, OT, unif, wholeT_0.5	15	43	18	107
J1, OT, unif, singleC	16.5	23	59.5	29.5
J1, OT-A, unif, singleC	16.5	38	59.5	29.5
S1, OT-A, last, wholeT_0.5	18	48	**2**	124
J1, OT, unif, wholeT_0.5	19.5	16	65.5	31.5
J1, OT-A, unif, wholeT_0.5	19.5	30	65.5	31.5
J1, OT-A, unif, wholeT_0.01	21	**5**	35.5	88.5
J1, OT, unif, wholeT_0.01	22	**4**	35.5	88.5
J5, OT-A, last, singleC	23	25	53	42
J5, OT-A, last, wholeT_0.5	24	34	52	42
S5, OT, last, singleC	25	19	51	**6**
S1, OT, unif, singleC	26.5	51	12.5	112
S1, OT-A, unif, singleC	26.5	64	12.5	113
S5, OT, last, wholeT_0.5	28	**7**	54	**6**
S1, OT-A, last, singleC	29	44	**4**	123
S5, CBN-A, unif, wholeT_0.01	30	**3**	37	91
S1, OT-A, last, wholeT_0.01	31	39	**1**	136
J5, OT-A, unif, wholeT_0.01	32	62	85.5	44.5
J5, OT, last, wholeT_0.01	33	**10**	56	25
J5, OT, unif, wholeT_0.01	34	59	85.5	44.5
S5, CBN-A, unif, singleC	35	21	64	77
J1, CBN-A, unif, wholeT_0.5	36	35	70	66
S5, CBN-A, unif, wholeT_0.5	37	37	71	80
J1, CBN-A, unif, singleC	38	29	63	73
J1, OT, last, wholeT_0.5	39	**8**	81	39
S5, OT, last, wholeT_0.01	40	**9**	26	84
J1, OT, last, singleC	41	26	83	48
J5, DiP-A, unif, wholeT_0.01	42	115	119	40
J5, OT, last, singleC	43	33	91.5	**6**
S5, CBN, unif, wholeT_0.01	44	15	49	100
J5, DiP-A, unif, singleC	45	117	126	15
S5, DiP-A, unif, wholeT_0.5	46	134	121	18
J1, OT, last, wholeT_0.01	47	27	46	94
S5, CBN, unif, singleC	48	53	75	90
J5, OT, last, wholeT_0.5	49	20	91.5	**6**
J5, DiP, unif, wholeT_0.01	50	131	135	36

Supplementary Table 15: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
S5, DiP-A, unif, singleC	51	114	120	19.5
J1, CBN, unif, wholeT_0.5	52	24	76.5	78
J1, CBN-A, unif, wholeT_0.01	53	22	43	97
J5, DiP-A, unif, wholeT_0.5	54	136	125	15
S5, CBN, unif, wholeT_0.5	55	36	78	87
S5, DiP-A, unif, wholeT_0.01	56	101	90	64
J5, OT, unif, singleC	57.5	60	100.5	21.5
J5, OT-A, unif, singleC	57.5	77	100.5	21.5
J1, CBN, unif, singleC	59	40	76.5	79
S5, DiP, unif, wholeT_0.5	60	144	131.5	15
J5, OT, unif, wholeT_0.5	61.5	54	100.5	23.5
J5, OT-A, unif, wholeT_0.5	61.5	80	100.5	23.5
J5, DiP-A, last, singleC	63	104	110	42
J5, DiP, unif, singleC	64	129	139	12
S5, DiP, unif, singleC	65	125	131.5	19.5
J5, DiP, unif, wholeT_0.5	66	141	140	**6**
J1, DiP-A, unif, wholeT_0.5	67	133	124	27
J1, DiP-A, unif, singleC	68	111	123	27
S1, OT, last, wholeT_0.5	69	50	29	122
S5, DiP, unif, wholeT_0.01	70	118	106	65
J5, DiP-A, last, wholeT_0.5	71	127	117	49
J1, CBN, unif, wholeT_0.01	72	31	47	105
J1, DiP, unif, wholeT_0.5	73	143	136	17
S1, OT, last, singleC	74	52	31	117
J1, DiP, unif, singleC	75	124	138	27
S1, OT, last, wholeT_0.01	76	45	20	131
J5, CBN-A, unif, wholeT_0.5	77	93	104	52
J5, CBN-A, unif, wholeT_0.01	78	70	89	82
J5, CBN-A, unif, singleC	79	87	103	58
J1, DiP-A, unif, wholeT_0.01	80	102	93	83
J1, DiP-A, last, singleC	81	105	109	46
J1, DiP-A, last, wholeT_0.5	82	128	111	56
J5, CBN-A, last, wholeT_0.01	83	46	50	110
J5, DiP, last, singleC	84	119	143	**6**
J5, CBN, unif, wholeT_0.5	85	75	114	59
J5, CBN, unif, wholeT_0.01	86	88	96	86
J5, CBN, unif, singleC	87	91	115	60
J5, DiP-A, last, wholeT_0.01	88	107	94	76
J5, DiP, last, wholeT_0.5	89	137	144	**6**
J5, CBN-A, last, singleC	90	74	74	103
J5, CBN, last, wholeT_0.01	91	72	62	109
J1, DiP, unif, wholeT_0.01	92	116	108	81
J1, CBN-A, last, wholeT_0.5	93	73	55	115
J1, CBN-A, last, singleC	94	78	61	116
J5, CBN-A, last, wholeT_0.5	95	96	72	104
J5, CBN, last, wholeT_0.5	96	68	87	102
S5, DiP-A, last, singleC	97	99	98	47
J1, CBN, last, singleC	98	67	73	114
J5, CBN, last, singleC	99	69	84	101
S1, OT-A, unif, wholeT_0.01	100	66	**6**	135

Supplementary Table 15: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
S5, DiP-A, last, wholeT_0.5	101	126	107	57
S5, CBN, last, singleC	102	41	42	119
S1, OT, unif, wholeT_0.01	103	61	**7**	134
S5, CBN, last, wholeT_0.5	104	42	44	118
S5, CBN-A, last, singleC	105	57	41	121
J1, CBN, last, wholeT_0.5	106	55	67	111
J1, DiP, last, wholeT_0.5	107	138	141.5	**6**
S5, CBN-A, last, wholeT_0.5	108	63	45	120
J1, DiP, last, singleC	109	120	141.5	**6**
J5, DiP, last, wholeT_0.01	110	130	130	13
S1, CBN-A, unif, wholeT_0.5	111	76	28	126
S1, CBN, unif, wholeT_0.5	112	71	32	130
S5, DiP, last, wholeT_0.5	113	139	137	**6**
S1, CBN-A, unif, singleC	114	79	23	133
S5, DiP, last, singleC	115	121	133	**6**
J1, DiP-A, last, wholeT_0.01	116	108	88	93
S1, CBN, unif, singleC	117	82	30	132
S1, DiP-A, unif, wholeT_0.5	118	135	118	61
S5, DiP-A, last, wholeT_0.01	119	100	80	95
J1, CBN-A, last, wholeT_0.01	120	83	40	125
S1, DiP, unif, wholeT_0.5	121	142	127.5	53
S5, CBN-A, last, wholeT_0.01	122	56	16	127
J1, CBN, last, wholeT_0.01	123	86	48	128
J1, DiP, last, wholeT_0.01	124	122	122	63
S1, DiP-A, unif, singleC	125	110	116	62
S5, CBN, last, wholeT_0.01	126	65	17	129
S1, DiP, unif, singleC	127	123	127.5	54
S5, DiP, last, wholeT_0.01	128	109	112.5	70
S1, CBN-A, unif, wholeT_0.01	129	81	**5**	142
S1, CBN-A, last, wholeT_0.01	130	92	**10**	137
S1, DiP-A, last, wholeT_0.01	131	98	79	99
S1, CBN-A, last, wholeT_0.5	132	94	27	140
S1, DiP-A, unif, wholeT_0.01	133	97	82	96
S1, CBN-A, last, singleC	134	90	25	141
S1, DiP-A, last, wholeT_0.5	135	132	105	72
S1, DiP-A, last, singleC	136	103	97	85
S1, CBN, last, wholeT_0.5	137	89	11	138
S1, DiP, unif, wholeT_0.01	138	106	95	92
S1, CBN, last, singleC	139	95	22	144
S1, CBN, unif, wholeT_0.01	140	84	**8**	143
S1, CBN, last, wholeT_0.01	141	85	14	139
S1, DiP, last, singleC	142	112	129	55
S1, DiP, last, wholeT_0.5	143	140	134	35
S1, DiP, last, wholeT_0.01	144	113	112.5	74

Supplementary Table 16: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. S.Size = 100. Only graphs with Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S5, OT-A, last, singleC	**1**	**3**	20	60
S5, OT-A, last, wholeT_0.5	**2**	**4**	22	61
J5, OT-A, last, wholeT_0.01	**3**	**1**	28	69
S5, OT, unif, singleC	**4**	57	61.5	40
S5, OT-A, unif, singleC	**5**	63	61.5	49
S5, OT-A, last, wholeT_0.01	**6**	**2**	**4**	99
S5, OT-A, unif, wholeT_0.5	**7**	54	68	43.5
S5, OT-A, unif, wholeT_0.01	**8**	13	33	71
S5, OT, unif, wholeT_0.5	**9**	37	69	43.5
J1, OT-A, last, singleC	**10**	17	40	92
S5, OT, unif, wholeT_0.01	11	**10**	35	70
J1, OT-A, last, wholeT_0.5	12	15	41	100
J1, OT, unif, singleC	13	14	58	62
J1, OT-A, unif, singleC	14	22	57	68
J5, OT-A, last, singleC	15	21	52	51.5
J5, OT-A, last, wholeT_0.5	16	16	54	51.5
J1, OT-A, unif, wholeT_0.5	17	28	64.5	66
J1, OT, unif, wholeT_0.5	18	11	64.5	64
S5, OT, last, wholeT_0.5	19	**5**	53	37
S5, OT, last, singleC	20	**8**	51	42
J5, OT-A, unif, wholeT_0.01	21	58	81	45.5
S5, CBN-A, unif, singleC	22	24	67	74
J1, OT-A, last, wholeT_0.01	23	25	**9**	121
S5, CBN-A, unif, wholeT_0.01	24	**7**	38	90
J1, CBN-A, unif, wholeT_0.5	25	19	59	78
J5, OT, last, wholeT_0.01	26	**9**	63	39
J5, OT, unif, wholeT_0.01	27	61	82	45.5
J1, CBN-A, unif, singleC	28	20	66	77
S1, OT-A, last, singleC	29	33	**3**	125
S1, OT-A, last, wholeT_0.5	30	29	**2**	123
S5, CBN-A, unif, wholeT_0.5	31	36	71	73
J5, OT, last, singleC	32	39	86	**7**
J1, CBN, unif, singleC	33	46	70	81
S1, OT-A, last, wholeT_0.01	34	18	**1**	130
S5, OT, last, wholeT_0.01	35	**6**	30	80
J5, DiP-A, unif, wholeT_0.01	36	126	107	48
J5, OT, last, wholeT_0.5	37	23	88	**7**
J1, OT-A, unif, wholeT_0.01	38	53	34	107
J1, OT, last, singleC	39	52	78	86
S5, CBN, unif, singleC	40	42	75	85
S5, CBN, unif, wholeT_0.01	41	12	47	95
J1, OT, last, wholeT_0.5	42	35	79	88
J5, OT, unif, singleC	43.5	86	91.5	22.5
J5, OT-A, unif, singleC	43.5	90	91.5	22.5
J5, DiP, unif, wholeT_0.01	45	128	119	41
J1, OT, unif, wholeT_0.01	46	48	36	103
S5, CBN, unif, wholeT_0.5	47	41	80	83
S1, OT-A, unif, wholeT_0.5	48	44	14	114
J5, DiP-A, unif, singleC	49.5	111	128	**7**
J5, DiP, unif, singleC	49.5	117	128	**7**

Supplementary Table 16: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, OT-A, unif, wholeT_0.5	51	85	89.5	28.5
S1, OT, unif, wholeT_0.5	52	32	15	113
J1, CBN, unif, wholeT_0.5	53	26	73	82
J5, OT, unif, wholeT_0.5	54	67	89.5	28.5
S1, OT, unif, singleC	55	30	12	116
J5, DiP-A, unif, wholeT_0.5	56.5	137	139.5	**7**
J5, DiP, unif, wholeT_0.5	56.5	141	139.5	**7**
S1, OT-A, unif, singleC	58	40	11	118
S5, DiP-A, unif, wholeT_0.5	59.5	139	128	32
S5, DiP, unif, wholeT_0.5	59.5	143	128	26
S5, DiP-A, unif, singleC	61	112	128	24
S5, DiP, unif, singleC	62	118	128	19.5
J5, CBN-A, unif, wholeT_0.01	63	65	83	75
J5, CBN-A, unif, wholeT_0.5	64	92	93	47
J5, CBN-A, unif, singleC	65	93	94	54
J5, CBN, unif, wholeT_0.01	66	88	87	79
J5, DiP, last, wholeT_0.5	67	133	139.5	**7**
J5, CBN, unif, wholeT_0.5	68	95	95	56
J1, OT, last, wholeT_0.01	69	43	43	115
J5, CBN, unif, singleC	70	96	96	55
J5, DiP-A, last, wholeT_0.5	71	131	128	19.5
J5, DiP, last, singleC	72	102	139.5	**7**
J5, CBN-A, last, wholeT_0.5	73	94	74	97
J5, CBN-A, last, wholeT_0.01	74	51	50	102
S5, DiP-A, unif, wholeT_0.01	75	113	99	67
J5, DiP-A, last, singleC	76	97	139.5	19.5
J5, CBN-A, last, singleC	77	84	76	96
J5, CBN, last, wholeT_0.01	78	59	55	101
J5, CBN, last, singleC	79	77	84	98
J1, CBN-A, unif, wholeT_0.01	80	56	37	119
S1, OT, last, singleC	81	49	31	120
S1, OT, last, wholeT_0.5	82	38	32	117
J1, DiP-A, unif, wholeT_0.5	83.5	138	139.5	25
J1, DiP, unif, wholeT_0.5	83.5	142	139.5	14
J5, CBN, last, wholeT_0.5	85	72	85	93
S5, DiP, unif, wholeT_0.01	86	123	106	59
J1, DiP-A, unif, singleC	87.5	114	128	19.5
J1, DiP, unif, singleC	87.5	119	128	16
S1, OT, last, wholeT_0.01	89	27	27	127
J1, CBN-A, last, singleC	90	64	56	109
J1, CBN, unif, wholeT_0.01	91	74	42	122
J1, CBN, last, singleC	92	66	60	110
S5, CBN, last, wholeT_0.5	93	31	46	108
J1, CBN-A, last, wholeT_0.5	94	69	72	105
S5, CBN-A, last, wholeT_0.5	95	60	49	106
S5, CBN, last, singleC	96	34	44	111
J5, DiP, last, wholeT_0.01	97	127	115	**7**
S5, CBN-A, last, singleC	98	47	48	112
S1, OT-A, unif, wholeT_0.01	99	50	**6**	134
J5, DiP-A, last, wholeT_0.01	100	121	109	65

Supplementary Table 16: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J1, CBN, last, wholeT_0.5	101	68	77	104
J1, DiP, last, singleC	102	103	139.5	**7**
J1, DiP-A, last, singleC	103	99	139.5	30.5
J1, DiP, last, wholeT_0.5	104	134	139.5	**7**
J1, DiP-A, last, wholeT_0.5	105	132	128	34
S1, OT, unif, wholeT_0.01	106	45	**8**	133
S5, DiP, last, wholeT_0.5	107	135	121	16
S5, DiP, last, singleC	108	106	113.5	**7**
S5, DiP-A, last, wholeT_0.5	109	129	117	27
S5, DiP-A, last, singleC	110	98	109	30.5
J1, DiP-A, unif, wholeT_0.01	111	110	104	76
J1, DiP, unif, wholeT_0.01	112	116	112	72
S5, CBN-A, last, wholeT_0.01	113	62	21	126
J1, CBN-A, last, wholeT_0.01	114	82	45	128
S1, CBN-A, unif, singleC	115	73	17	135
S1, CBN-A, unif, wholeT_0.5	116	75	25	131
S1, CBN, unif, wholeT_0.5	117	71	29	132
J1, CBN, last, wholeT_0.01	118	80	39	129
S5, CBN, last, wholeT_0.01	119	55	24	124
S5, DiP-A, last, wholeT_0.01	120	105	100	84
S5, DiP, last, wholeT_0.01	121	124	101.5	57
S1, CBN, unif, singleC	122	78	16	136
J1, DiP, last, wholeT_0.01	123	122	111	63
J1, DiP-A, last, wholeT_0.01	124	108	105	89
S1, DiP-A, unif, wholeT_0.5	125	140	128	53
S1, DiP, unif, wholeT_0.5	126	144	128	38
S1, DiP-A, unif, singleC	127	115	120	36
S1, DiP, unif, singleC	128	120	128	35
S1, CBN-A, unif, wholeT_0.01	129	70	**5**	142
S1, CBN-A, last, singleC	130	83	23	139
S1, CBN-A, last, wholeT_0.5	131	91	26	141
S1, CBN, last, wholeT_0.5	132	89	18	138
S1, CBN-A, last, wholeT_0.01	133	79	**10**	137
S1, CBN, last, singleC	134	87	13	144
S1, CBN, unif, wholeT_0.01	135	76	**7**	143
S1, DiP-A, unif, wholeT_0.01	136	101	97	94
S1, DiP, last, wholeT_0.5	137	136	117	16
S1, DiP, unif, wholeT_0.01	138	104	103	91
S1, DiP, last, singleC	139	109	113.5	**7**
S1, DiP-A, last, singleC	140	100	109	33
S1, DiP, last, wholeT_0.01	141	125	101.5	58
S1, DiP-A, last, wholeT_0.5	142	130	117	50
S1, DiP-A, last, wholeT_0.01	143	107	98	87
S1, CBN, last, wholeT_0.01	144	81	19	140

10.2.2 Overall ranking: Drivers Unknown, no conjunction

Supplementary Table 17: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S5, OT-A, last, singleC	**1**	13	13	60
S5, OT-A, last, wholeT_0.5	**2**	**7**	23	59
S5, OT-A, last, wholeT_0.01	**3**	**5**	**4**	94
J5, OT-A, last, wholeT_0.01	**4**	**2**	29	74
S1, OT-A, last, wholeT_0.5	**5**	27	**3**	116
J1, OT-A, last, singleC	**6**	12	37	75
J1, OT-A, last, wholeT_0.5	**7**	**6**	39	71
S5, OT-A, unif, singleC	**8**	49	55.5	20.5
S5, OT, unif, singleC	**9**	38	55.5	20.5
S5, OT-A, unif, wholeT_0.01	**10**	17	32.5	68.5
S5, OT, unif, wholeT_0.01	11	**10**	32.5	68.5
S1, OT-A, last, singleC	12	32	**2**	120
S5, OT, unif, wholeT_0.5	13	30	60.5	27.5
S5, OT-A, unif, wholeT_0.5	14	45	60.5	27.5
J1, OT-A, last, wholeT_0.01	15	19	**8**	108
S1, OT, unif, wholeT_0.5	16.5	22	20.5	101
S1, OT-A, unif, wholeT_0.5	16.5	37	20.5	102
S1, OT-A, unif, singleC	18	36	10.5	106
S1, OT, unif, singleC	19	24	10.5	105
S5, OT, last, singleC	20	**8**	42	19
J1, OT-A, unif, singleC	21	31	65	34.5
J1, OT, unif, singleC	22	16	67	34.5
S5, OT, last, wholeT_0.5	23	**3**	49	17
S1, OT-A, last, wholeT_0.01	24	50	**1**	134
J5, OT-A, last, singleC	25	41	59	47
J1, OT-A, unif, wholeT_0.5	26	28	69.5	45.5
J1, OT, unif, wholeT_0.5	27	11	69.5	45.5
J1, OT-A, unif, wholeT_0.01	28	18	35	92
J5, OT-A, last, wholeT_0.5	29	33	63	44
J1, OT, unif, wholeT_0.01	30	14	36	91
S5, DiP-A, unif, wholeT_0.5	31	137	119	31
S5, DiP-A, unif, singleC	32	117	118	26
J5, OT-A, unif, wholeT_0.01	33	67	94	40.5
S5, OT, last, wholeT_0.01	34	**1**	24	82
J5, OT, unif, wholeT_0.01	35	53	95	40.5
J5, OT, last, wholeT_0.01	36	**4**	62	50
J1, OT, last, singleC	37	25	82	53
J1, OT, last, wholeT_0.5	38	**9**	83	43
S5, DiP, unif, wholeT_0.5	39	141	127	25
S5, CBN-A, unif, wholeT_0.01	40	20	40	103
S5, DiP, unif, singleC	41	125	128	13
S5, DiP-A, unif, wholeT_0.01	42	112	86	70
S1, OT, last, wholeT_0.5	43	21	25	109
S1, OT, last, singleC	44	35	16	112
S5, CBN-A, unif, singleC	45	47	72	84
J5, DiP-A, unif, wholeT_0.01	46	133	135	33
J1, CBN-A, unif, singleC	47	40	79	76
J1, CBN-A, unif, wholeT_0.5	48	39	78	64
S5, CBN-A, unif, wholeT_0.5	49	46	75	85
J1, OT, last, wholeT_0.01	50	15	38	96

Supplementary Table 17: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, DiP-A, unif, singleC	51	128	138	**9**
J5, DiP, unif, wholeT_0.01	52	138	142	32
S5, DiP, unif, wholeT_0.01	53	120	96	72
J5, DiP-A, unif, wholeT_0.5	54	143	141	11.5
J5, DiP-A, last, wholeT_0.01	55	105	89	73
J5, DiP-A, last, singleC	56	110	124	37
J1, DiP-A, unif, singleC	57	118	129	29
J5, OT, last, singleC	58	43	109	**4.5**
S5, DiP-A, last, wholeT_0.5	59	124	87	48
J5, DiP, unif, singleC	60	132	144	**4.5**
J5, OT-A, unif, singleC	61	79	116	14.5
J5, DiP-A, last, wholeT_0.5	62	129	126	36
J5, OT, unif, singleC	63	71	117	14.5
J5, DiP, unif, wholeT_0.5	64	144	143	**4.5**
J1, DiP-A, unif, wholeT_0.5	65	139	130	24
S5, CBN, unif, wholeT_0.01	66	26	46	107
J1, CBN, unif, singleC	67	44	91	81
S5, CBN, unif, singleC	68	51	84	88
S5, DiP-A, last, singleC	69	100	80	52
S1, OT-A, unif, wholeT_0.01	70	59	**5**	136
J1, CBN-A, unif, wholeT_0.01	71	29	44	110
J1, CBN, unif, wholeT_0.5	72	34	93	77
J1, DiP-A, last, wholeT_0.5	73	126	108	38
S1, OT, unif, wholeT_0.01	74	55	**6**	135
J5, OT, last, wholeT_0.5	75	23	112	**4.5**
J5, OT-A, unif, wholeT_0.5	76	75	120	22.5
J5, OT, unif, wholeT_0.5	77	54	121	22.5
J1, DiP-A, last, singleC	78	104	107	39
J1, DiP, unif, singleC	79	127	137	18
S5, CBN, unif, wholeT_0.5	80	48	88	90
J5, DiP, last, singleC	81	119	140	**4.5**
J1, DiP, unif, wholeT_0.5	82	142	136	16
J5, DiP, last, wholeT_0.5	83	136	139	**4.5**
J1, DiP-A, unif, wholeT_0.01	84	107	97	80
S1, OT, last, wholeT_0.01	85	52	14	132
J5, CBN-A, last, wholeT_0.01	86	56	51	111
S5, DiP, last, wholeT_0.5	87	130	110	**10**
J5, CBN-A, unif, wholeT_0.01	88	72	102	83
J1, DiP, last, wholeT_0.5	89	134	134	**4.5**
J5, CBN-A, unif, singleC	90	84	123	56
S5, DiP, last, singleC	91	106	106	11.5
J5, CBN-A, unif, wholeT_0.5	92	82	122	54
J1, DiP, last, singleC	93	115	132	**4.5**
S5, DiP-A, last, wholeT_0.01	94	89	53	87
J1, DiP-A, last, wholeT_0.01	95	97	64	89
J5, DiP, last, wholeT_0.01	96	121	125	30
J1, CBN, unif, wholeT_0.01	97	42	52	114
J1, DiP, unif, wholeT_0.01	98	113	114	79
J5, CBN, unif, wholeT_0.01	99	87	113	86
J5, CBN, unif, singleC	100	103	131	63

Supplementary Table 17: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, CBN-A, last, wholeT_0.5	101	93	90	98
J5, CBN-A, last, singleC	102	83	92	100
J5, CBN, last, singleC	103	77	103	97
J5, CBN, last, wholeT_0.5	104	78	105	95
J5, CBN, unif, wholeT_0.5	105	86	133	62
J1, CBN-A, last, singleC	106	69	66	119
J5, CBN, last, wholeT_0.01	107	61	57	113
S1, CBN-A, unif, wholeT_0.5	108	66	31	126
J1, CBN-A, last, wholeT_0.5	109	74	73	117
S1, DiP-A, unif, wholeT_0.5	110	135	101	58
J1, CBN, last, singleC	111	65	68	118
S1, CBN-A, unif, singleC	112	64	27	130
J1, CBN, last, wholeT_0.5	113	68	74	115
S1, DiP, unif, wholeT_0.5	114	140	115	51
S1, DiP-A, unif, singleC	115	116	98	57
S1, CBN, unif, singleC	116	60	30	129
S1, CBN, unif, wholeT_0.5	117	58	34	127
J1, DiP, last, wholeT_0.01	118	114	104	67
S5, CBN, last, singleC	119	63	45	123
S5, DiP, last, wholeT_0.01	120	109	85	65
S5, CBN, last, wholeT_0.5	121	57	47	122
S5, CBN-A, last, singleC	122	62	48	124
S1, DiP, unif, singleC	123	122	111	55
S5, CBN-A, last, wholeT_0.5	124	70	54	121
J1, CBN-A, last, wholeT_0.01	125	76	43	125
S5, CBN-A, last, wholeT_0.01	126	73	26	131
S1, DiP-A, last, wholeT_0.01	127	91	50	93
S1, DiP-A, last, wholeT_0.5	128	123	76	61
J1, CBN, last, wholeT_0.01	129	80	41	128
S1, DiP-A, last, singleC	130	101	71	66
S1, DiP-A, unif, wholeT_0.01	131	98	58	104
S5, CBN, last, wholeT_0.01	132	85	28	133
S1, DiP, last, wholeT_0.5	133	131	100	42
S1, DiP, last, wholeT_0.01	134	108	81	78
S1, DiP, unif, wholeT_0.01	135	111	77	99
S1, DiP, last, singleC	136	102	99	49
S1, CBN-A, last, wholeT_0.5	137	95	22	138
S1, CBN-A, last, singleC	138	88	17	141
S1, CBN-A, last, wholeT_0.01	139	94	12	137
S1, CBN-A, unif, wholeT_0.01	140	81	**7**	143
S1, CBN, last, wholeT_0.5	141	92	19	139
S1, CBN, last, singleC	142	96	15	142
S1, CBN, unif, wholeT_0.01	143	90	**9**	144
S1, CBN, last, wholeT_0.01	144	99	18	140

Supplementary Table 18: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. S.Size = 1000. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S1, OT, unif, singleC	**1.5**	**4**	22.5	60.5
S1, OT-A, unif, singleC	**1.5**	11	22.5	60.5
S5, OT-A, last, singleC	**3**	27	17	63.5
S5, OT-A, last, wholeT_0.5	**4**	22	24	63.5
S1, OT, unif, wholeT_0.5	**5.5**	**5**	29.5	56.5
S1, OT-A, unif, wholeT_0.5	**5.5**	19	29.5	56.5
S1, OT-A, last, wholeT_0.5	**7**	25	**3**	101
S5, OT-A, last, wholeT_0.01	**8**	20	**5**	100
S5, DiP-A, last, wholeT_0.01	**9**	31	**8**	96
S5, DiP-A, last, singleC	**10**	57	28	63.5
S5, DiP-A, last, wholeT_0.5	11	74	35	63.5
S1, OT-A, last, singleC	12	44	**2**	106
J1, OT-A, last, wholeT_0.01	13	40	**10**	105
J1, DiP-A, last, wholeT_0.01	14	34	14	91
S1, DiP-A, unif, singleC	15	73	48	44
J5, DiP-A, last, wholeT_0.01	16	16	42	66
S5, DiP-A, unif, singleC	17	86	81	16.5
S5, DiP-A, unif, wholeT_0.5	18	119	84	16.5
J5, OT-A, last, wholeT_0.01	19	**6**	38	78
J1, OT-A, last, singleC	20	17	52	52.5
S5, OT, unif, wholeT_0.01	21.5	15	43.5	68.5
S5, OT-A, unif, wholeT_0.01	21.5	28	43.5	68.5
J1, OT-A, last, wholeT_0.5	23	12	53	52.5
S1, DiP-A, unif, wholeT_0.5	24	91	57	42.5
S5, OT, unif, singleC	25.5	47	79.5	16.5
S5, OT-A, unif, singleC	25.5	66	79.5	16.5
S5, DiP-A, unif, wholeT_0.01	27	70	51	71
S5, OT, unif, wholeT_0.5	28.5	33	82.5	16.5
S5, OT-A, unif, wholeT_0.5	28.5	58	82.5	16.5
S5, DiP, unif, wholeT_0.5	30	125	102	16.5
S5, DiP, unif, singleC	31	94	96	16.5
S5, DiP, last, singleC	32	35	60	16.5
S1, DiP, unif, wholeT_0.5	33	108	73	45
S5, OT, last, singleC	34	**9**	56	16.5
S5, DiP, last, wholeT_0.5	35	55	64	16.5
J1, DiP-A, last, singleC	36	50	70.5	52.5
J1, DiP-A, last, wholeT_0.5	37	68	70.5	52.5
S5, DiP, unif, wholeT_0.01	38	76	65	77
S1, DiP, unif, singleC	39	87	66	42.5
S1, OT-A, last, wholeT_0.01	40	92	**1**	133
J1, OT, unif, wholeT_0.01	41.5	**3**	54.5	81.5
J1, OT-A, unif, wholeT_0.01	41.5	**7**	54.5	81.5
S5, OT, last, wholeT_0.5	43	**2**	62	16.5
S1, DiP-A, last, wholeT_0.01	44	30	**4**	103
J1, DiP-A, unif, singleC	45	84	107	34.5
J1, DiP-A, unif, wholeT_0.5	46	118	111	16.5
S1, DiP-A, last, wholeT_0.5	47	79	15	86
J5, DiP-A, last, singleC	48	85	92	48.5
S5, OT, last, wholeT_0.01	49	**1**	31	80
S1, OT, last, singleC	50	45	16	93

Supplementary Table 18: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
S1, OT, last, wholeT_0.5	51	**10**	32	85
J1, OT, unif, singleC	52.5	21	98.5	34.5
J1, OT-A, unif, singleC	52.5	39	98.5	34.5
S5, DiP, last, wholeT_0.01	54	32	39	76
J1, DiP-A, unif, wholeT_0.01	55	38	74	83
J5, OT-A, last, singleC	56	61	86	48.5
J5, DiP-A, last, wholeT_0.5	57	100	95	48.5
J1, DiP, unif, singleC	58	93	119	34.5
S1, DiP-A, last, singleC	59	54	12	88
J1, DiP, last, singleC	60	62	108.5	16.5
J1, DiP, last, wholeT_0.01	61	41	61	74
J1, OT, unif, wholeT_0.5	62.5	18	103.5	16.5
J1, OT-A, unif, wholeT_0.5	62.5	36	103.5	16.5
J1, DiP, last, wholeT_0.5	64	80	108.5	16.5
J5, OT-A, last, wholeT_0.5	65	53	87	48.5
J1, DiP, unif, wholeT_0.5	66	123	120	16.5
J1, OT, last, wholeT_0.01	67	14	50	89
S1, CBN-A, unif, singleC	68	60	37	117
J5, DiP, last, wholeT_0.01	69	48	91	37
J1, OT, last, singleC	70	26	105.5	16.5
J1, DiP, unif, wholeT_0.01	71	49	88	84
S1, CBN, unif, singleC	72	52	45	116
J5, DiP-A, unif, wholeT_0.01	73	129	123	39.5
S1, OT-A, unif, wholeT_0.01	74	107	**6.5**	136
J1, OT, last, wholeT_0.5	75	13	105.5	16.5
S1, CBN-A, unif, wholeT_0.5	76	63	41	115
S1, OT, unif, wholeT_0.01	77	103	**6.5**	135
J5, OT, last, wholeT_0.01	78	**8**	85	46
J5, OT, unif, wholeT_0.01	79.5	77	117.5	39.5
J5, OT-A, unif, wholeT_0.01	79.5	89	117.5	39.5
J5, DiP-A, unif, singleC	81	130	133	16.5
J5, DiP, last, singleC	82	88	129.5	16.5
J5, DiP, unif, wholeT_0.01	83	143	140	39.5
J5, DiP-A, unif, wholeT_0.5	84	142	137	16.5
J5, DiP, last, wholeT_0.5	85	114	129.5	16.5
S1, DiP, last, wholeT_0.5	86	72	47	75
S1, CBN, unif, wholeT_0.5	87	65	49	120
J1, CBN-A, unif, wholeT_0.01	88	29	69	102
S5, CBN-A, unif, wholeT_0.01	89	64	59	111
S5, CBN-A, unif, wholeT_0.5	90	67	101	94
J5, DiP, unif, singleC	91	141	141	16.5
J1, CBN-A, unif, wholeT_0.5	92	56	115	55
S5, CBN-A, unif, singleC	93	81	94	92
J5, DiP, unif, wholeT_0.5	94	144	142	16.5
J1, CBN-A, unif, singleC	95	71	113	79
S1, DiP, last, wholeT_0.01	96	24	33	90
S1, OT, last, wholeT_0.01	97	96	19	130
S5, CBN, unif, wholeT_0.01	98	43	67	110
S1, DiP-A, unif, wholeT_0.01	99	46	13	109
J5, OT, last, singleC	100	59	127.5	16.5

Supplementary Table 18: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
S1, DiP, last, singleC	101	23	46	70
S5, CBN, unif, wholeT_0.5	102	69	114	97
S5, CBN, unif, singleC	103	78	110	98
J5, OT, unif, singleC	104.5	90	133	16.5
J5, OT-A, unif, singleC	104.5	109	133	16.5
J5, OT, last, wholeT_0.5	106	37	127.5	16.5
J1, CBN, unif, wholeT_0.5	107	51	121	67
J5, OT, unif, wholeT_0.5	108.5	82	137	16.5
J5, OT-A, unif, wholeT_0.5	108.5	97	137	16.5
J1, CBN, unif, wholeT_0.01	110	42	77	114
J5, CBN-A, last, wholeT_0.01	111	99	75	119
J1, CBN, unif, singleC	112	83	122	87
S1, DiP, unif, wholeT_0.01	113	75	34	113
J5, CBN-A, unif, singleC	114	111	135	58.5
J5, CBN-A, unif, wholeT_0.5	115	116	139	58.5
J5, CBN-A, unif, wholeT_0.01	116	117	125	95
J1, CBN-A, last, wholeT_0.01	117	105	58	125
J5, CBN-A, last, wholeT_0.5	118	134	116	108
J5, CBN-A, last, singleC	119	124	112	112
J1, CBN-A, last, wholeT_0.5	120	121	90	123
J5, CBN, last, singleC	121	110	124	107
J1, CBN-A, last, singleC	122	106	93	124
J5, CBN, last, wholeT_0.5	123	122	126	104
J1, CBN, last, wholeT_0.5	124	95	100	121
J1, CBN, last, singleC	125	98	97	122
J5, CBN, unif, singleC	126	140	143	72.5
J5, CBN, unif, wholeT_0.01	127	139	131	99
J5, CBN, last, wholeT_0.01	128	102	89	118
J5, CBN, unif, wholeT_0.5	129	136	144	72.5
S5, CBN, last, singleC	130	101	63	128
S5, CBN, last, wholeT_0.5	131	104	72	129
S5, CBN-A, last, singleC	132	113	76	131
S5, CBN-A, last, wholeT_0.01	133	120	36	132
S5, CBN-A, last, wholeT_0.5	134	115	78	127
J1, CBN, last, wholeT_0.01	135	112	68	126
S1, CBN-A, last, wholeT_0.01	136	138	18	137
S1, CBN-A, unif, wholeT_0.01	137	127	**9**	143
S1, CBN-A, last, wholeT_0.5	138	131	27	140
S1, CBN-A, last, singleC	139	126	25	141
S5, CBN, last, wholeT_0.01	140	132	40	134
S1, CBN, last, singleC	141	135	21	138
S1, CBN, unif, wholeT_0.01	142	133	11	144
S1, CBN, last, wholeT_0.5	143	128	20	142
S1, CBN, last, wholeT_0.01	144	137	26	139

Supplementary Table 19: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. S.Size = 200. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S5, OT-A, last, singleC	**1**	16	17	55.5
S5, OT-A, last, wholeT_0.5	**2**	**10**	27	55.5
J5, OT-A, last, wholeT_0.01	**3**	**1**	29	72
J1, OT-A, last, singleC	**4**	13	38	62
J1, OT-A, last, wholeT_0.5	**5**	**6**	40	53
S5, OT-A, last, wholeT_0.01	**6**	**5**	**3**	95
J1, OT-A, last, wholeT_0.01	**7**	15	**8**	103
S5, OT, unif, singleC	**8.5**	33	57.5	16.5
S5, OT-A, unif, singleC	**8.5**	49	57.5	16.5
S5, OT, unif, wholeT_0.01	10.5	17	31.5	65.5
S5, OT-A, unif, wholeT_0.01	10.5	21	31.5	65.5
S5, OT, unif, wholeT_0.5	12.5	27	55.5	28.5
S5, OT-A, unif, wholeT_0.5	12.5	45	55.5	28.5
S1, OT-A, last, wholeT_0.5	14	36	**4**	121
S1, OT, unif, wholeT_0.5	15.5	40	25.5	108
S1, OT-A, unif, wholeT_0.5	15.5	58	25.5	109
S1, OT-A, last, singleC	17	39	**2**	124
S1, OT, unif, singleC	18	43	11.5	113.5
S1, OT-A, unif, singleC	19	55	11.5	113.5
J1, OT, unif, singleC	20.5	19	61.5	22.5
J1, OT-A, unif, singleC	20.5	26	61.5	22.5
J1, OT-A, unif, wholeT_0.01	22	11	35	84.5
J1, OT, unif, wholeT_0.5	23.5	20	69.5	32.5
J1, OT-A, unif, wholeT_0.5	23.5	31	69.5	32.5
S1, OT-A, last, wholeT_0.01	25	42	**1**	132
J5, OT-A, last, singleC	26	35	53	45
J1, OT, unif, wholeT_0.01	27	**7**	36	84.5
S5, OT, last, singleC	28	**9**	45	**7.5**
S5, OT, last, wholeT_0.5	29	**3**	50	**7.5**
J5, OT-A, last, wholeT_0.5	30	29	59	41.5
J5, OT-A, unif, wholeT_0.01	31	66	84.5	43.5
J5, OT, unif, wholeT_0.01	32	59	84.5	43.5
S5, CBN-A, unif, wholeT_0.01	33	18	39	99
J1, CBN-A, unif, singleC	34	30	72	63
J1, OT, last, wholeT_0.5	35	12	77	26
J5, OT, last, wholeT_0.01	36	**4**	63	47
J1, OT, last, singleC	37	22	75	34
J1, CBN-A, unif, wholeT_0.5	38	34	74	58
S5, OT, last, wholeT_0.01	39	**2**	21	83
S5, CBN-A, unif, singleC	40	41	68	86
J1, OT, last, wholeT_0.01	41	**8**	41	88
J5, DiP-A, unif, wholeT_0.01	42	131	128	37.5
J1, CBN, unif, singleC	43	32	78	71
S5, DiP-A, unif, singleC	44	111	116	35
S5, CBN-A, unif, wholeT_0.5	45	46	66	89
J1, CBN-A, unif, wholeT_0.01	46	14	43	102
S5, DiP-A, unif, wholeT_0.5	47	135	118	40
S1, OT, last, wholeT_0.5	48	38	22	117
J5, OT, last, singleC	49	37	94	**7.5**
J5, DiP-A, unif, singleC	50	124	134	**7.5**

Supplementary Table 19: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, DiP, unif, wholeT_0.01	51	132	138	37.5
S1, OT, last, singleC	52	44	19	118
J5, OT, unif, singleC	53.5	64	102.5	**7.5**
J5, OT-A, unif, singleC	53.5	80	102.5	**7.5**
J1, CBN, unif, wholeT_0.5	55	28	86	73
S5, DiP-A, unif, wholeT_0.01	56	106	95	75.5
J5, OT, unif, wholeT_0.5	57.5	56	102.5	24.5
J5, OT-A, unif, wholeT_0.5	57.5	75	102.5	24.5
J5, DiP-A, unif, wholeT_0.5	59	137	135	16.5
S5, CBN, unif, wholeT_0.01	60	23	44	105
J5, DiP, unif, wholeT_0.5	61	143	139	**7.5**
J5, DiP, unif, singleC	62	128	144	**7.5**
J5, OT, last, wholeT_0.5	63	24	99	**7.5**
J1, DiP-A, unif, singleC	64	114	122	31
S5, CBN, unif, singleC	65	53	79	90
S5, DiP, unif, wholeT_0.5	66	142	132	30
S5, DiP, unif, singleC	67	125	133	20
S1, OT-A, unif, wholeT_0.01	68	54	**5**	134
S1, OT, unif, wholeT_0.01	69	50	**6**	133
S5, CBN, unif, wholeT_0.5	70	51	76	94
J1, DiP-A, unif, wholeT_0.5	71	140	130	27
J5, CBN-A, unif, wholeT_0.01	72	71	89	82
J5, DiP-A, last, singleC	73	103	121	46
J5, CBN-A, last, wholeT_0.01	74	48	51	107
J1, DiP, unif, singleC	75	130	136	20
S5, DiP, unif, wholeT_0.01	76	118	108	75.5
J5, DiP-A, last, wholeT_0.5	77	126	125	41.5
J5, CBN-A, unif, wholeT_0.5	78	85	106	50
S1, OT, last, wholeT_0.01	79	47	14	130
J1, DiP-A, unif, wholeT_0.01	80	109	100	81
J5, CBN-A, unif, singleC	81	88	109	57
J1, DiP, unif, wholeT_0.5	82	144	137	20
J1, CBN, unif, wholeT_0.01	83	25	49	106
J5, CBN, unif, wholeT_0.01	84	76	98	87
J5, DiP, last, singleC	85	120	143	**7.5**
J1, DiP-A, last, wholeT_0.5	86	127	112	49
J5, DiP, last, wholeT_0.5	87	138	142	**7.5**
J1, DiP-A, last, singleC	88	104	113	48
J5, CBN, last, wholeT_0.5	89	82	91	93
J5, CBN, unif, singleC	90	93	117	64
J5, CBN, unif, wholeT_0.5	91	72	115	61
J1, CBN-A, last, wholeT_0.5	92	62	64	112
J5, CBN-A, last, wholeT_0.5	93	91	82	100
S5, DiP-A, last, wholeT_0.5	94	119	96	54
J5, DiP-A, last, wholeT_0.01	95	110	97	79
J5, CBN-A, last, singleC	96	77	81	101
J5, CBN, last, wholeT_0.01	97	60	54	110
J1, DiP, unif, wholeT_0.01	98	117	111	80
J5, CBN, last, singleC	99	84	90	98
J1, CBN, last, singleC	100	61	65	116

Supplementary Table 19: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J1, CBN-A, last, singleC	101	70	60	115
S5, DiP-A, last, singleC	102	101	88	60
J1, CBN, last, wholeT_0.5	103	63	67	111
J1, DiP, last, wholeT_0.5	104	139	141	**7.5**
S1, CBN-A, unif, wholeT_0.5	105	73	33	128
J1, DiP, last, singleC	106	122	140	**7.5**
J5, DiP, last, wholeT_0.01	107	129	131	39
S1, CBN, unif, wholeT_0.5	108	67	34	127
S5, CBN, last, singleC	109	65	46	122
S5, CBN, last, wholeT_0.5	110	52	47	120
S5, DiP, last, wholeT_0.5	111	134	126	**7.5**
J1, DiP-A, last, wholeT_0.01	112	100	83	91
S5, CBN-A, last, singleC	113	57	42	123
S5, DiP, last, singleC	114	108	124	16.5
S5, CBN-A, last, wholeT_0.5	115	68	52	119
S1, CBN, unif, singleC	116	74	30	136
S1, CBN-A, unif, singleC	117	79	28	135
J1, CBN-A, last, wholeT_0.01	118	81	48	125
S5, DiP-A, last, wholeT_0.01	119	97	73	92
S5, CBN-A, last, wholeT_0.01	120	69	15	129
S1, DiP-A, unif, wholeT_0.5	121	136	114	69
J1, CBN, last, wholeT_0.01	122	78	37	126
J1, DiP, last, wholeT_0.01	123	121	120	67
S1, DiP, unif, wholeT_0.5	124	141	127	51
S5, CBN, last, wholeT_0.01	125	87	18	131
S5, DiP, last, wholeT_0.01	126	112	107	70
S1, DiP-A, unif, singleC	127	116	110	77
S1, DiP, unif, singleC	128	123	129	68
S1, DiP-A, last, wholeT_0.01	129	98	71	96
S1, CBN-A, last, wholeT_0.5	130	95	20	137
S1, CBN-A, last, singleC	131	89	13	141
S1, DiP-A, unif, wholeT_0.01	132	99	80	104
S1, CBN-A, last, wholeT_0.01	133	92	**10**	138
S1, DiP-A, last, wholeT_0.5	134	115	92	59
S1, CBN-A, unif, wholeT_0.01	135	83	**7**	142
S1, CBN, last, wholeT_0.5	136	90	23	139
S1, DiP, unif, wholeT_0.01	137	105	93	97
S1, DiP-A, last, singleC	138	102	87	74
S1, CBN, unif, wholeT_0.01	139	86	**9**	143
S1, DiP, last, wholeT_0.01	140	113	105	78
S1, CBN, last, singleC	141	94	24	144
S1, DiP, last, wholeT_0.5	142	133	123	36
S1, CBN, last, wholeT_0.01	143	96	16	140
S1, DiP, last, singleC	144	107	119	52

Supplementary Table 20: Overall ranking of all 144 combinations of method, filtering, and sampling when Drivers are Unknown with respect to each performance metric. S.Size = 100. Only graphs without Conjunction. Methods have been ordered by their performance in the first metric. Best 10 methods are shown in bold.

Method and sampling	Diff	PFD	PND	FPF
S5, OT-A, last, singleC	**1**	**8**	16	63
S5, OT-A, last, wholeT_0.5	**2**	**5**	28	59
J5, OT-A, last, wholeT_0.01	**3**	**1**	31	69
S5, OT-A, last, wholeT_0.01	**4**	**3**	**4**	98
S5, OT-A, unif, singleC	**5**	57	54.5	31.5
J1, OT-A, last, singleC	**6**	15	38	91
S5, OT, unif, singleC	**7**	44	54.5	31.5
S5, OT-A, unif, wholeT_0.01	**8**	12	33.5	70.5
S5, OT, unif, wholeT_0.5	**9**	27	65.5	45.5
J1, OT-A, last, wholeT_0.5	**10**	11	40	85
S5, OT-A, unif, wholeT_0.5	11	55	65.5	45.5
S5, OT, unif, wholeT_0.01	12	**10**	33.5	70.5
S1, OT-A, last, wholeT_0.5	13	19	**3**	123
S1, OT-A, last, singleC	14	13	**2**	124
J1, OT-A, unif, singleC	15	30	59	57.5
J1, OT, unif, singleC	16	23	61	57.5
J1, OT-A, unif, wholeT_0.5	17	17	56.5	67.5
J1, OT, unif, wholeT_0.5	18	**9**	56.5	67.5
S5, OT, last, singleC	19	16	44	38
J5, OT-A, last, wholeT_0.5	20	24	62	44
J5, OT-A, last, singleC	21	33	60	49
J1, OT-A, last, wholeT_0.01	22	25	**8**	115
S5, OT, last, wholeT_0.5	23	**7**	49	30
S1, OT-A, last, wholeT_0.01	24	26	**1**	132
J5, OT-A, unif, wholeT_0.01	25	68	79	42.5
J5, OT, unif, wholeT_0.01	26	63	81	42.5
S1, OT, unif, wholeT_0.5	27.5	28	13.5	112
S1, OT-A, unif, wholeT_0.5	27.5	43	13.5	113
S5, CBN-A, unif, wholeT_0.01	29	**6**	37	99
J5, OT, last, wholeT_0.01	30	**4**	58	51
S5, CBN-A, unif, singleC	31	47	68	79
S5, CBN-A, unif, wholeT_0.5	32	48	71	78
S1, OT-A, unif, singleC	33	54	10.5	120
S1, OT, unif, singleC	34	40	10.5	118
J1, OT, last, singleC	35	37	75	76
S5, OT, last, wholeT_0.01	36	**2**	26	83
J1, CBN-A, unif, singleC	37	29	69	80
J1, OT-A, unif, wholeT_0.01	38	61	35	105
J1, CBN-A, unif, wholeT_0.5	39	39	67	75
J1, OT, last, wholeT_0.5	40	14	77	72
J5, OT-A, unif, singleC	41	89	89	23.5
J1, OT, unif, wholeT_0.01	42	53	36	103
J5, OT, unif, singleC	43	81	90	23.5
S5, CBN, unif, singleC	44	46	74	87
J5, DiP-A, unif, wholeT_0.01	45	127	111	34
J5, OT, last, singleC	46	41	86	**4.5**
J1, CBN, unif, singleC	47	38	76	89
J5, OT, last, wholeT_0.5	48	18	88	**4.5**
J5, OT-A, unif, wholeT_0.5	49	78	91	35.5
J5, OT, unif, wholeT_0.5	50	64	92	35.5

Supplementary Table 20: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
J5, DiP, unif, wholeT_0.01	51	128	128.5	33
J5, DiP-A, unif, singleC	52.5	111	140	**10**
J5, DiP, unif, singleC	52.5	119	140	**4.5**
J5, DiP-A, unif, wholeT_0.5	54	137	131	**10**
J1, CBN, unif, wholeT_0.5	55	32	72	82
J5, DiP, unif, wholeT_0.5	56	141	140	**4.5**
S5, CBN, unif, wholeT_0.5	57	52	78	86
S5, CBN, unif, wholeT_0.01	58	21	47	100
S1, OT, last, wholeT_0.5	59	22	25	114
S1, OT, last, singleC	60	20	23	119
J5, CBN-A, unif, wholeT_0.01	61	56	83	74
S5, DiP-A, unif, wholeT_0.5	62	139	117	50
S5, DiP, unif, wholeT_0.5	63	143	130	29
J5, CBN-A, last, wholeT_0.01	64	45	50	101
J5, CBN-A, unif, singleC	65	95	93	53
J5, CBN-A, unif, wholeT_0.5	66	92	94	47
S5, DiP-A, unif, singleC	67	115	119	37
J1, OT, last, wholeT_0.01	68	34	41	109
S5, DiP, unif, singleC	69	123	127	15
J5, DiP, last, singleC	70	104	140	**4.5**
J5, DiP, last, wholeT_0.5	71	133	140	**4.5**
J5, CBN, unif, wholeT_0.01	72	76	87	81
J5, CBN, unif, singleC	73	96	96	62
J5, DiP-A, last, wholeT_0.5	74	129	140	18
J5, DiP-A, last, singleC	75	98	135	18
J5, CBN, last, singleC	76	74	84	92
J5, CBN, unif, wholeT_0.5	77	83	98	56
J1, CBN-A, unif, wholeT_0.01	78	58	39	122
S1, OT-A, unif, wholeT_0.01	79	35	**5**	133
S1, OT, last, wholeT_0.01	80	31	22	128
J5, CBN-A, last, singleC	81	93	82	94
J1, CBN-A, last, singleC	82	59	63	106
S1, OT, unif, wholeT_0.01	83	36	**6**	130
J5, CBN-A, last, wholeT_0.5	84	86	80	96
J5, CBN, last, wholeT_0.5	85	71	85	95
S5, DiP-A, unif, wholeT_0.01	86	116	97	64
J5, CBN, last, wholeT_0.01	87	51	53	102
S5, DiP, unif, wholeT_0.01	88	125	102	61
J1, DiP-A, unif, wholeT_0.5	89	138	126	27
J1, DiP-A, unif, singleC	90.5	113	140	40
J1, DiP, unif, singleC	90.5	121	140	20
J1, CBN, unif, wholeT_0.01	92	67	51	121
J1, CBN, last, singleC	93	62	64	107
J1, DiP, unif, wholeT_0.5	94	142	133.5	16
J1, CBN-A, last, wholeT_0.5	95	69	73	108
J5, DiP-A, last, wholeT_0.01	96	118	108	66
S5, CBN, last, singleC	97	50	45	117
J1, CBN, last, wholeT_0.5	98	66	70	104
J5, DiP, last, wholeT_0.01	99	126	110	39
J1, DiP, last, singleC	100	106	132	**4.5**

Supplementary Table 20: *(continued)*

Method and sampling	Diff	PFD	PND	FPF
S5, CBN, last, wholeT_0.5	101	42	46	111
S5, CBN-A, last, singleC	102	49	48	116
J1, DiP, last, wholeT_0.5	103	134	140	**4.5**
J1, DiP-A, last, singleC	104	101	128.5	21
J1, DiP-A, last, wholeT_0.5	105	131	133.5	18
S5, CBN-A, last, wholeT_0.5	106	60	52	110
J1, DiP-A, unif, wholeT_0.01	107	108	103	77
S5, DiP, last, wholeT_0.5	108	135	123.5	12.5
S5, DiP-A, last, wholeT_0.5	109	130	123.5	22
J1, DiP, unif, wholeT_0.01	110	112	107	73
S5, CBN-A, last, wholeT_0.01	111	65	27	125
S5, DiP, last, singleC	112	109	115.5	**10**
S5, DiP-A, last, singleC	113	100	112.5	25.5
J1, CBN-A, last, wholeT_0.01	114	75	43	126
J1, CBN, last, wholeT_0.01	115	94	42	129
S1, CBN-A, unif, wholeT_0.5	116	87	29	131
S1, CBN-A, unif, singleC	117	79	17	135
S5, CBN, last, wholeT_0.01	118	70	30	127
S1, CBN, unif, wholeT_0.5	119	77	32	134
J1, DiP, last, wholeT_0.01	120	120	109	65
S1, CBN, unif, singleC	121	82	21	136
J1, DiP-A, last, wholeT_0.01	122	105	106	90
S5, DiP-A, last, wholeT_0.01	123	97	99.5	84
S5, DiP, last, wholeT_0.01	124	122	104.5	55
S1, DiP-A, unif, wholeT_0.5	125	140	114	54
S1, DiP, unif, wholeT_0.5	126	144	121	48
S1, DiP-A, unif, singleC	127	117	118	52
S1, CBN-A, last, singleC	128	80	20	139
S1, DiP, unif, singleC	129	124	120	41
S1, CBN-A, last, wholeT_0.5	130	90	24	140
S1, CBN-A, unif, wholeT_0.01	131	72	**7**	141
S1, CBN, last, wholeT_0.5	132	88	19	138
S1, DiP-A, unif, wholeT_0.01	133	103	95	97
S1, CBN-A, last, wholeT_0.01	134	73	15	137
S1, DiP, unif, wholeT_0.01	135	107	101	93
S1, CBN, last, singleC	136	91	12	144
S1, DiP-A, last, wholeT_0.01	137	99	99.5	88
S1, DiP, last, wholeT_0.01	138	114	104.5	60
S1, CBN, unif, wholeT_0.01	139	85	**9**	143
S1, DiP, last, wholeT_0.5	140	136	123.5	12.5
S1, DiP, last, singleC	141	110	115.5	14
S1, DiP-A, last, wholeT_0.5	142	132	123.5	28
S1, CBN, last, wholeT_0.01	143	84	18	142
S1, DiP-A, last, singleC	144	102	112.5	25.5

11 Frequencies of best subsets

These tables show, grouped by sampling time, sampling type, and conjunction, the frequency of best subsets, as shown in the file best-subsets.pdf.

The total number of scenarios examined by row is 72 (3 * 4 * 2 * 3), and the overall total is 864 (3 * 2 * 4 * 2 * 3 * 3 * 2).

11.1 Drivers Known

Supplementary Table 21: Frequency of best subsets for metric Diff when Drivers are Known. The table shows the 4 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	OT, OT-A	OT-A	OT	DiP, DiP-A, OT, OT-A
1	Yes	last	singleC	36	23	11	0
2	Yes	last	wholeT_0.01	31	23	10	1
3	Yes	last	wholeT_0.5	36	23	10	0
4	Yes	unif	singleC	55	0	2	3
5	Yes	unif	wholeT_0.01	56	2	0	1
6	Yes	unif	wholeT_0.5	57	0	0	3
7	No	last	singleC	38	21	5	0
8	No	last	wholeT_0.01	34	21	5	3
9	No	last	wholeT_0.5	38	21	5	0
10	No	unif	singleC	59	0	0	4
11	No	unif	wholeT_0.01	57	3	1	4
12	No	unif	wholeT_0.5	58	0	0	4
13	OVERALL	-	-	555	137	49	23

Supplementary Table 22: Frequency of best subsets for metric PFD when Drivers are Known. The table shows the 7 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	OT, OT-A	DiP, DiP-A, OT, OT-A	OT-A	DiP, OT	DiP-A, OT, OT-A	OT	CBN, CBN-A, DiP, DiP-A, OT, OT-A
1	Yes	last	singleC	35	5	14	4	4	8	0
2	Yes	last	wholeT_0.01	31	4	10	8	3	7	0
3	Yes	last	wholeT_0.5	31	4	14	6	6	6	0
4	Yes	unif	singleC	40	13	0	0	2	1	5
5	Yes	unif	wholeT_0.01	28	15	1	0	2	0	3
6	Yes	unif	wholeT_0.5	45	9	0	0	1	0	5
7	No	last	singleC	46	8	3	8	3	4	0
8	No	last	wholeT_0.01	28	17	6	9	1	3	1
9	No	last	wholeT_0.5	38	9	4	7	9	5	0
10	No	unif	singleC	43	15	0	0	0	0	4
11	No	unif	wholeT_0.01	31	19	1	0	3	0	3
12	No	unif	wholeT_0.5	50	10	0	0	0	0	3
13	OVERALL	-	-	446	128	53	42	34	34	24

Supplementary Table 23: Frequency of best subsets for metric PND when Drivers are Known. The table shows the 7 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	CBN, CBN-A	OT, OT-A	OT-A	CBN, CBN-A, OT, OT-A	CBN-A	CBN	DiP-A, OT-A
1	Yes	last	singleC	28	5	7	4	4	8	0
2	Yes	last	wholeT_0.01	20	7	17	5	10	6	1
3	Yes	last	wholeT_0.5	29	5	7	5	6	8	1
4	Yes	unif	singleC	56	1	0	3	9	1	0
5	Yes	unif	wholeT_0.01	48	2	0	6	7	5	0
6	Yes	unif	wholeT_0.5	55	2	0	4	9	1	0
7	No	last	singleC	10	19	18	10	3	1	7
8	No	last	wholeT_0.01	8	20	21	4	1	3	7
9	No	last	wholeT_0.5	12	19	17	8	3	1	7
10	No	unif	singleC	31	19	1	11	1	2	0
11	No	unif	wholeT_0.01	24	21	2	11	6	1	0
12	No	unif	wholeT_0.5	31	19	2	7	1	6	0
13	OVERALL	-	-	352	139	92	78	60	43	23

Supplementary Table 24: Frequency of best subsets for metric FPF when Drivers are Known. The table shows the 5 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	DiP, DiP-A, OT, OT-A	DiP, DiP-A	DiP, OT	OT, OT-A	DiP
1	Yes	last	singleC	48	1	10	7	1
2	Yes	last	wholeT_0.01	20	17	11	6	6
3	Yes	last	wholeT_0.5	47	3	12	4	0
4	Yes	unif	singleC	52	11	0	1	1
5	Yes	unif	wholeT_0.01	25	23	0	6	5
6	Yes	unif	wholeT_0.5	49	14	0	2	0
7	No	last	singleC	47	1	10	11	0
8	No	last	wholeT_0.01	28	13	12	4	6
9	No	last	wholeT_0.5	50	1	10	5	1
10	No	unif	singleC	45	13	0	3	1
11	No	unif	wholeT_0.01	29	21	0	6	2
12	No	unif	wholeT_0.5	45	13	0	4	3
13	OVERALL	-	-	485	131	65	59	26

11.2 Drivers Unknown

Supplementary Table 25: Frequency of best subsets for metric Diff when Drivers are Unknown. The table shows the 7 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	S5:OT, S5:OT-A	S1:OT, S1:OT-A	S5:OT-A	S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	S5:OT	S1:DiP, S1:DiP-A, S1:OT, S1:OT-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J5:OT, J5:OT-A
1	Yes	last	singleC	13	13	9	3	7	0	1
2	Yes	last	wholeT_0.01	12	1	8	1	13	1	7
3	Yes	last	wholeT_0.5	13	9	9	4	5	0	1
4	Yes	unif	singleC	14	11	1	6	1	5	0
5	Yes	unif	wholeT_0.01	19	2	3	7	2	0	2
6	Yes	unif	wholeT_0.5	14	8	0	4	0	7	0
7	No	last	singleC	12	12	11	4	7	0	0
8	No	last	wholeT_0.01	13	3	8	4	5	1	7
9	No	last	wholeT_0.5	11	11	14	4	6	0	0
10	No	unif	singleC	21	12	1	4	1	7	0
11	No	unif	wholeT_0.01	24	5	4	9	1	0	4
12	No	unif	wholeT_0.5	14	14	2	4	3	9	0
13	OVERALL	-	-	180	101	70	54	51	30	22

Supplementary Table 26: Frequency of best subsets for metric PFD when Drivers are Unknown. The table shows the 6 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	S1:OT, S1:OT-A	J1:CBN, J1:CBN-A, J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:CBN, J5:CBN-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:CBN, S1:CBN-A, S1:DiP, S1:DiP-A, S1:OT, S1:OT-A, S5:CBN, S5:CBN-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	S5:OT, S5:OT-A	J5:OT, J5:OT-A, S5:OT, S5:OT-A	J5:OT, J5:OT-A	J1:OT, J1:OT-A, S5:OT, S5:OT-A
1	Yes	last	singleC	9	0	4	11	3	2
2	Yes	last	wholeT_0.01	0	2	0	6	8	1
3	Yes	last	wholeT_0.5	10	1	3	8	3	2
4	Yes	unif	singleC	11	15	3	0	0	3
5	Yes	unif	wholeT_0.01	4	0	11	2	3	0
6	Yes	unif	wholeT_0.5	8	18	1	0	2	2
7	No	last	singleC	8	0	4	7	2	2
8	No	last	wholeT_0.01	1	2	3	4	7	1
9	No	last	wholeT_0.5	11	1	3	3	2	2
10	No	unif	singleC	12	13	5	0	0	3
11	No	unif	wholeT_0.01	5	0	11	1	6	2
12	No	unif	wholeT_0.5	10	15	5	1	0	3
13	OVERALL	-	-	89	67	53	43	36	23

Supplementary Table 27: Frequency of best subsets for metric PND when Drivers are Unknown. The table shows the 7 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	S1:OT, S1:OT-A	S1:CBN, S1:CBN-A, S1:OT, S1:OT-A	S1:OT-A, S5:OT-A	S1:OT-A	S1:OT, S1:OT-A, S5:OT, S5:OT-A	J1:CBN, J1:CBN-A, J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:CBN, J5:CBN-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:CBN, S1:CBN-A, S1:DiP, S1:DiP-A, S1:OT, S1:OT-A, S5:CBN, S5:CBN-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	S1:CBN-A
1	Yes	last	singleC	29	4	11	6	1	0	1
2	Yes	last	wholeT_0.01	13	2	10	9	10	0	1
3	Yes	last	wholeT_0.5	27	3	8	7	1	1	1
4	Yes	unif	singleC	12	26	0	0	0	9	7
5	Yes	unif	wholeT_0.01	8	15	0	4	0	0	5
6	Yes	unif	wholeT_0.5	10	28	0	0	0	12	5
7	No	last	singleC	26	3	10	9	6	0	0
8	No	last	wholeT_0.01	13	0	11	4	15	0	0
9	No	last	wholeT_0.5	27	3	8	9	4	1	0
10	No	unif	singleC	31	19	1	0	3	8	0
11	No	unif	wholeT_0.01	23	13	2	4	2	1	2
12	No	unif	wholeT_0.5	30	15	2	0	2	11	0
13	OVERALL	-	-	249	131	63	52	44	43	22

Supplementary Table 28: Frequency of best subsets for metric FPF when Drivers are Unknown. The table shows the 11 most common best subset combinations (combinations not shown have a frequency less than 0.025).

	Conjunction	S.Time	S.Type	J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:DiP, S1:DiP-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J1:CBN, J1:CBN-A, J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:CBN, J5:CBN-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:DiP, S1:DiP-A, S5:CBN, S5:CBN-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J1:DiP, J1:DiP-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:DiP, S1:DiP-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J5:DiP, J5:DiP-A, J5:OT, J5:OT-A	J1:DiP, J1:OT, J5:DiP, J5:OT, S1:DiP, S5:DiP, S5:OT	J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:CBN, J5:CBN-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:DiP, S1:DiP-A, S1:OT, S1:OT-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J1:CBN, J1:CBN-A, J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:CBN, J5:CBN-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:CBN, S1:CBN-A, S1:DiP, S1:DiP-A, S1:OT, S1:OT-A, S5:CBN, S5:CBN-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:CBN, J5:CBN-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:DiP, S1:DiP-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J1:CBN, J1:CBN-A, J1:DiP, J1:DiP-A, J1:OT, J1:OT-A, J5:CBN, J5:CBN-A, J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S1:DiP, S1:DiP-A, S1:OT, S1:OT-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A	J5:DiP, J5:DiP-A, J5:OT, J5:OT-A, S5:DiP, S5:DiP-A, S5:OT, S5:OT-A
1	Yes	last	singleC	6	1	5	9	0	7	4	0	3	1	0
2	Yes	last	wholeT_0.01	3	1	2	3	11	5	0	2	0	0	0
3	Yes	last	wholeT_0.5	8	2	7	9	1	7	5	0	3	0	0
4	Yes	unif	singleC	3	11	3	2	1	0	4	8	5	6	4
5	Yes	unif	wholeT_0.01	0	10	5	2	11	0	3	0	3	0	5
6	Yes	unif	wholeT_0.5	3	8	2	1	1	0	1	9	6	6	2
7	No	last	singleC	12	1	7	10	0	5	6	0	1	1	0
8	No	last	wholeT_0.01	6	1	4	5	7	8	0	2	0	0	1
9	No	last	wholeT_0.5	16	1	5	6	0	6	4	1	4	0	0
10	No	unif	singleC	1	7	4	0	1	0	4	6	3	4	3
11	No	unif	wholeT_0.01	0	10	4	1	13	0	2	0	2	0	5
12	No	unif	wholeT_0.5	2	4	2	2	1	0	3	8	1	8	3
13	OVERALL	-	-	60	57	50	50	47	38	36	36	31	26	23

12 Model fits: tables

We show here the coefficients for the fitted models. For performance metrics, "smaller is better" and thus the more negative the coefficient, the better. For "Inferred edges", the model fits a Poisson to the number of edges in the transitive closure of the cover relationships (whether correct or not), so larger coefficients denote large numbers of edges.

The models have been fitted using sum-to-zero contrasts (*contr.Sum*, from package Fox and Weisberg (2011)), so that the missing parameter for a factor (or factor combination) is $-\sum rest\ of\ parameters\ for\ that\ factor$, and the intercept is the overall mean. The fits shown for "Inferred edges" correspond to a model with two-way interactions. The fits for the performance metrics correspond to the model in the main text: two-way interactions between all factors and thee-way interactions between the user-controllable factors (Method, Filter, Sample size, Sample time, Sample type); these are the models shown in the figures too.

We display here four columns of the columns that are standard in the summary output of R-INLA (Rue *et al.*, 2009; Martins *et al.*, 2013). These are all models that have been fitted with the default prior for the hyperparameters (Gamma(a, b), $a = 1, b = 0.00005$).

12.1 Drivers Known

12.1.1 Fit for Diff, Drivers Known

Supplementary Table 29: Model fit for metric 'Diff' when there are no passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	2.042	0.001	2.039	2.044
S.Size(100)	0.132	0.002	0.129	0.135
S.Size(1000)	−0.197	0.002	−0.201	−0.194
Method(CBN)	0.305	0.002	0.301	0.310
Method(CBN-A)	0.248	0.002	0.244	0.253
Method(OT)	−0.505	0.003	−0.512	−0.499
Method(OT-A)	−0.795	0.004	−0.802	−0.788
Method(DiP)	0.415	0.002	0.410	0.419
S.Time(last)	0.032	0.001	0.029	0.034
S.Type(singleC)	−0.014	0.002	−0.017	−0.011
S.Type(wholeT_0.01)	0.012	0.002	0.009	0.015
Model(Bozic)	0.159	0.002	0.155	0.163
Model(McF_4)	−0.113	0.002	−0.117	−0.109
Model(McF_6)	−0.256	0.002	−0.260	−0.251
Conjunction(No)	−0.173	0.001	−0.176	−0.171
sh(0)	0.025	0.001	0.022	0.027
NumNodes(7)	0.003	0.002	−0.001	0.006
NumNodes(9)	−0.136	0.002	−0.139	−0.133
S.Size(100):Method(CBN)	−0.101	0.003	−0.107	−0.095
S.Size(1000):Method(CBN)	0.159	0.003	0.152	0.165
S.Size(100):Method(CBN-A)	−0.086	0.003	−0.092	−0.079
S.Size(1000):Method(CBN-A)	0.136	0.003	0.130	0.143
S.Size(100):Method(OT)	−0.010	0.004	−0.017	−0.002
S.Size(1000):Method(OT)	0.039	0.004	0.031	0.047
S.Size(100):Method(OT-A)	0.001	0.005	−0.007	0.010
S.Size(1000):Method(OT-A)	0.030	0.005	0.020	0.039
S.Size(100):Method(DiP)	0.060	0.003	0.054	0.065
S.Size(1000):Method(DiP)	−0.132	0.003	−0.138	−0.126
S.Size(100):S.Time(last)	−0.004	0.001	−0.007	−0.001
S.Size(1000):S.Time(last)	0.003	0.002	−0.001	0.006
S.Size(100):S.Type(singleC)	−0.001	0.002	−0.005	0.003
S.Size(1000):S.Type(singleC)	0.002	0.002	−0.002	0.007
S.Size(100):S.Type(wholeT_0.01)	0.010	0.002	0.006	0.014
S.Size(1000):S.Type(wholeT_0.01)	−0.014	0.002	−0.018	−0.010
S.Size(100):Model(Bozic)	−0.060	0.002	−0.065	−0.055
S.Size(1000):Model(Bozic)	0.081	0.003	0.076	0.086
S.Size(100):Model(McF_4)	0.029	0.003	0.024	0.034
S.Size(1000):Model(McF_4)	−0.049	0.003	−0.055	−0.044
S.Size(100):Model(McF_6)	0.122	0.003	0.117	0.128
S.Size(1000):Model(McF_6)	−0.168	0.003	−0.174	−0.162
S.Size(100):Conjunction(No)	0.029	0.001	0.026	0.032
S.Size(1000):Conjunction(No)	−0.042	0.002	−0.045	−0.039
S.Size(100):sh(0)	0.000	0.001	−0.003	0.002
S.Size(1000):sh(0)	0.014	0.002	0.011	0.017
S.Size(100):NumNodes(7)	−0.043	0.002	−0.047	−0.039
S.Size(1000):NumNodes(7)	0.070	0.002	0.065	0.074
S.Size(100):NumNodes(9)	0.006	0.002	0.002	0.011
S.Size(1000):NumNodes(9)	−0.012	0.002	−0.016	−0.007
Method(CBN):S.Time(last)	0.078	0.002	0.073	0.082
Method(CBN-A):S.Time(last)	0.091	0.002	0.086	0.095
Method(OT):S.Time(last)	0.077	0.003	0.071	0.082
Method(OT-A):S.Time(last)	−0.186	0.003	−0.192	−0.179
Method(DiP):S.Time(last)	−0.023	0.002	−0.027	−0.019

Supplementary Table 29: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(CBN):S.Type(singleC)	−0.001	0.003	−0.007	0.005
Method(CBN-A):S.Type(singleC)	0.019	0.003	0.013	0.025
Method(OT):S.Type(singleC)	−0.038	0.004	−0.046	−0.030
Method(OT-A):S.Type(singleC)	−0.057	0.005	−0.066	−0.048
Method(DiP):S.Type(singleC)	0.035	0.003	0.030	0.041
Method(CBN):S.Type(wholeT_0.01)	−0.003	0.003	−0.009	0.004
Method(CBN-A):S.Type(wholeT_0.01)	−0.031	0.003	−0.038	−0.025
Method(OT):S.Type(wholeT_0.01)	0.074	0.004	0.066	0.082
Method(OT-A):S.Type(wholeT_0.01)	0.107	0.005	0.098	0.116
Method(DiP):S.Type(wholeT_0.01)	−0.066	0.003	−0.072	−0.060
Method(CBN):Model(Bozic)	−0.145	0.004	−0.152	−0.137
Method(CBN-A):Model(Bozic)	−0.097	0.004	−0.105	−0.090
Method(OT):Model(Bozic)	0.123	0.005	0.113	0.132
Method(OT-A):Model(Bozic)	0.150	0.005	0.140	0.161
Method(DiP):Model(Bozic)	−0.028	0.004	−0.035	−0.021
Method(CBN):Model(McF_4)	0.181	0.004	0.173	0.188
Method(CBN-A):Model(McF_4)	0.201	0.004	0.194	0.209
Method(OT):Model(McF_4)	−0.148	0.006	−0.159	−0.137
Method(OT-A):Model(McF_4)	−0.279	0.007	−0.292	−0.266
Method(DiP):Model(McF_4)	0.037	0.004	0.030	0.045
Method(CBN):Model(McF_6)	0.108	0.004	0.100	0.116
Method(CBN-A):Model(McF_6)	−0.007	0.004	−0.015	0.002
Method(OT):Model(McF_6)	−0.079	0.006	−0.090	−0.067
Method(OT-A):Model(McF_6)	−0.009	0.006	−0.022	0.003
Method(DiP):Model(McF_6)	0.018	0.004	0.010	0.025
Method(CBN):Conjunction(No)	0.104	0.002	0.099	0.108
Method(CBN-A):Conjunction(No)	0.095	0.002	0.091	0.099
Method(OT):Conjunction(No)	−0.087	0.003	−0.093	−0.081
Method(OT-A):Conjunction(No)	−0.211	0.003	−0.218	−0.205
Method(DiP):Conjunction(No)	0.057	0.002	0.053	0.061
Method(CBN):sh(0)	0.022	0.002	0.018	0.026
Method(CBN-A):sh(0)	0.028	0.002	0.024	0.032
Method(OT):sh(0)	0.029	0.003	0.023	0.035
Method(OT-A):sh(0)	0.057	0.003	0.050	0.063
Method(DiP):sh(0)	−0.072	0.002	−0.076	−0.068
Method(CBN):NumNodes(7)	−0.156	0.003	−0.162	−0.150
Method(CBN-A):NumNodes(7)	−0.181	0.003	−0.188	−0.175
Method(OT):NumNodes(7)	0.455	0.004	0.447	0.462
Method(OT-A):NumNodes(7)	−0.071	0.005	−0.081	−0.062
Method(DiP):NumNodes(7)	0.016	0.003	0.010	0.022
Method(CBN):NumNodes(9)	0.057	0.003	0.051	0.064
Method(CBN-A):NumNodes(9)	0.078	0.003	0.071	0.084
Method(OT):NumNodes(9)	−0.190	0.005	−0.199	−0.181
Method(OT-A):NumNodes(9)	0.070	0.005	0.060	0.079
Method(DiP):NumNodes(9)	−0.032	0.003	−0.038	−0.026
S.Time(last):S.Type(singleC)	0.009	0.001	0.006	0.012
S.Time(last):S.Type(wholeT_0.01)	−0.017	0.001	−0.020	−0.014
S.Time(last):Model(Bozic)	−0.098	0.002	−0.101	−0.095
S.Time(last):Model(McF_4)	−0.020	0.002	−0.024	−0.016
S.Time(last):Model(McF_6)	0.205	0.002	0.201	0.209
S.Time(last):Conjunction(No)	−0.004	0.001	−0.006	−0.001
S.Time(last):sh(0)	0.015	0.001	0.013	0.017
S.Time(last):NumNodes(7)	0.053	0.002	0.050	0.056
S.Time(last):NumNodes(9)	−0.001	0.002	−0.004	0.002
S.Type(singleC):Model(Bozic)	−0.013	0.002	−0.017	−0.008
S.Type(wholeT_0.01):Model(Bozic)	0.013	0.002	0.008	0.017
S.Type(singleC):Model(McF_4)	0.009	0.003	0.004	0.014

Supplementary Table 29: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
S.Type(wholeT_0.01):Model(McF_4)	−0.011	0.003	−0.016	−0.006
S.Type(singleC):Model(McF_6)	0.001	0.003	−0.004	0.007
S.Type(wholeT_0.01):Model(McF_6)	−0.008	0.003	−0.013	−0.002
S.Type(singleC):Conjunction(No)	−0.001	0.001	−0.004	0.002
S.Type(wholeT_0.01):Conjunction(No)	0.004	0.001	0.001	0.006
S.Type(singleC):sh(0)	0.009	0.001	0.006	0.012
S.Type(wholeT_0.01):sh(0)	−0.021	0.001	−0.024	−0.018
S.Type(singleC):NumNodes(7)	−0.017	0.002	−0.022	−0.013
S.Type(wholeT_0.01):NumNodes(7)	0.038	0.002	0.034	0.042
S.Type(singleC):NumNodes(9)	0.012	0.002	0.008	0.016
S.Type(wholeT_0.01):NumNodes(9)	−0.022	0.002	−0.026	−0.017
Model(Bozic):Conjunction(No)	0.028	0.002	0.025	0.032
Model(McF_4):Conjunction(No)	−0.046	0.002	−0.050	−0.043
Model(McF_6):Conjunction(No)	−0.024	0.002	−0.028	−0.020
Model(Bozic):sh(0)	0.069	0.002	0.066	0.073
Model(McF_4):sh(0)	−0.053	0.002	−0.056	−0.049
Model(McF_6):sh(0)	−0.072	0.002	−0.076	−0.068
Model(Bozic):NumNodes(7)	−0.022	0.003	−0.027	−0.017
Model(McF_4):NumNodes(7)	0.076	0.003	0.071	0.081
Model(McF_6):NumNodes(7)	−0.009	0.003	−0.015	−0.004
Model(Bozic):NumNodes(9)	−0.009	0.003	−0.014	−0.004
Model(McF_4):NumNodes(9)	−0.043	0.003	−0.049	−0.038
Model(McF_6):NumNodes(9)	0.039	0.003	0.033	0.044
Conjunction(No):sh(0)	0.002	0.001	−0.001	0.004
Conjunction(No):NumNodes(7)	−0.038	0.002	−0.041	−0.035
Conjunction(No):NumNodes(9)	−0.027	0.002	−0.030	−0.024
sh(0):NumNodes(7)	−0.027	0.001	−0.030	−0.024
sh(0):NumNodes(9)	0.016	0.002	0.013	0.019

12.1.2 Fit for PFD, Drivers Known

Supplementary Table 30: Model fit for metric 'PFD' when there are no passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	−0.857	0.007	−0.871	−0.844
S.Size(100)	0.540	0.009	0.523	0.557
S.Size(1000)	−0.686	0.008	−0.701	−0.671
Method(CBN)	0.858	0.007	0.843	0.872
Method(CBN-A)	0.774	0.007	0.759	0.788
Method(OT)	−1.713	0.013	−1.739	−1.687
Method(OT-A)	−1.383	0.011	−1.405	−1.362
Method(DiP)	1.030	0.023	0.985	1.076
S.Time(last)	−0.122	0.005	−0.132	−0.112
S.Type(singleC)	−0.049	0.007	−0.063	−0.035
S.Type(wholeT_0.01)	0.090	0.006	0.078	0.103
Model(Bozic)	0.637	0.008	0.621	0.653
Model(McF_4)	−0.777	0.010	−0.797	−0.757
Model(McF_6)	−0.630	0.009	−0.647	−0.613
Conjunction(No)	0.031	0.005	0.022	0.040
sh(0)	−0.145	0.005	−0.155	−0.135
NumNodes(7)	−0.113	0.008	−0.129	−0.097
NumNodes(9)	−0.101	0.007	−0.115	−0.087
S.Size(100):Method(CBN)	−0.447	0.009	−0.465	−0.428
S.Size(1000):Method(CBN)	0.584	0.008	0.568	0.601
S.Size(100):Method(CBN-A)	−0.435	0.009	−0.454	−0.417
S.Size(1000):Method(CBN-A)	0.568	0.008	0.551	0.584
S.Size(100):Method(OT)	−0.308	0.015	−0.337	−0.279
S.Size(1000):Method(OT)	0.444	0.014	0.417	0.472
S.Size(100):Method(OT-A)	−0.410	0.013	−0.435	−0.386
S.Size(1000):Method(OT-A)	0.546	0.012	0.523	0.569
S.Size(100):Method(DiP)	0.891	0.031	0.831	0.952
S.Size(1000):Method(DiP)	−1.413	0.026	−1.465	−1.361
S.Size(100):S.Time(last)	−0.053	0.004	−0.061	−0.045
S.Size(1000):S.Time(last)	0.076	0.004	0.068	0.084
S.Size(100):S.Type(singleC)	0.011	0.006	0.000	0.023
S.Size(1000):S.Type(singleC)	−0.010	0.006	−0.021	0.002
S.Size(100):S.Type(wholeT_0.01)	−0.015	0.006	−0.026	−0.003
S.Size(1000):S.Type(wholeT_0.01)	0.013	0.006	0.002	0.024
S.Size(100):Model(Bozic)	−0.003	0.007	−0.017	0.010
S.Size(1000):Model(Bozic)	−0.002	0.007	−0.016	0.012
S.Size(100):Model(McF_4)	−0.070	0.007	−0.085	−0.056
S.Size(1000):Model(McF_4)	0.094	0.007	0.080	0.108
S.Size(100):Model(McF_6)	0.076	0.008	0.061	0.091
S.Size(1000):Model(McF_6)	−0.078	0.008	−0.093	−0.063
S.Size(100):Conjunction(No)	0.014	0.004	0.006	0.022
S.Size(1000):Conjunction(No)	−0.015	0.004	−0.023	−0.007
S.Size(100):sh(0)	−0.019	0.004	−0.027	−0.011
S.Size(1000):sh(0)	0.040	0.004	0.032	0.048
S.Size(100):NumNodes(7)	0.015	0.007	0.002	0.029
S.Size(1000):NumNodes(7)	0.000	0.007	−0.013	0.013
S.Size(100):NumNodes(9)	−0.019	0.006	−0.031	−0.008
S.Size(1000):NumNodes(9)	0.021	0.006	0.009	0.032
Method(CBN):S.Time(last)	0.273	0.005	0.262	0.284
Method(CBN-A):S.Time(last)	0.234	0.006	0.223	0.245
Method(OT):S.Time(last)	−0.286	0.011	−0.307	−0.265
Method(OT-A):S.Time(last)	−0.070	0.008	−0.086	−0.053
Method(DiP):S.Time(last)	−0.200	0.015	−0.229	−0.171
Method(CBN):S.Type(singleC)	0.056	0.008	0.040	0.071

Supplementary Table 30: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(CBN-A):S.Type(singleC)	0.080	0.008	0.064	0.096
Method(OT):S.Type(singleC)	−0.281	0.016	−0.311	−0.250
Method(OT-A):S.Type(singleC)	−0.193	0.012	−0.217	−0.168
Method(DiP):S.Type(singleC)	0.260	0.022	0.218	0.303
Method(CBN):S.Type(wholeT_0.01)	−0.152	0.007	−0.167	−0.138
Method(CBN-A):S.Type(wholeT_0.01)	−0.190	0.007	−0.205	−0.175
Method(OT):S.Type(wholeT_0.01)	0.526	0.013	0.501	0.552
Method(OT-A):S.Type(wholeT_0.01)	0.376	0.011	0.354	0.397
Method(DiP):S.Type(wholeT_0.01)	−0.440	0.020	−0.480	−0.400
Method(CBN):Model(Bozic)	−0.474	0.009	−0.492	−0.456
Method(CBN-A):Model(Bozic)	−0.437	0.009	−0.455	−0.419
Method(OT):Model(Bozic)	0.182	0.015	0.151	0.212
Method(OT-A):Model(Bozic)	−0.111	0.014	−0.138	−0.083
Method(DiP):Model(Bozic)	0.626	0.024	0.578	0.674
Method(CBN):Model(McF_4)	0.888	0.011	0.866	0.909
Method(CBN-A):Model(McF_4)	0.867	0.011	0.845	0.888
Method(OT):Model(McF_4)	−0.157	0.022	−0.200	−0.115
Method(OT-A):Model(McF_4)	−0.349	0.020	−0.388	−0.310
Method(DiP):Model(McF_4)	−0.426	0.029	−0.482	−0.370
Method(CBN):Model(McF_6)	0.040	0.010	0.020	0.059
Method(CBN-A):Model(McF_6)	−0.037	0.010	−0.057	−0.017
Method(OT):Model(McF_6)	0.100	0.018	0.064	0.136
Method(OT-A):Model(McF_6)	0.882	0.014	0.855	0.908
Method(DiP):Model(McF_6)	−1.173	0.028	−1.229	−1.118
Method(CBN):Conjunction(No)	0.144	0.005	0.134	0.155
Method(CBN-A):Conjunction(No)	0.125	0.005	0.115	0.136
Method(OT):Conjunction(No)	−0.077	0.010	−0.096	−0.058
Method(OT-A):Conjunction(No)	−0.042	0.008	−0.058	−0.026
Method(DiP):Conjunction(No)	−0.071	0.014	−0.099	−0.043
Method(CBN):sh(0)	0.265	0.006	0.254	0.276
Method(CBN-A):sh(0)	0.275	0.006	0.263	0.286
Method(OT):sh(0)	0.163	0.010	0.143	0.183
Method(OT-A):sh(0)	0.145	0.008	0.129	0.161
Method(DiP):sh(0)	−0.602	0.016	−0.635	−0.570
Method(CBN):NumNodes(7)	−0.451	0.010	−0.470	−0.431
Method(CBN-A):NumNodes(7)	−0.483	0.010	−0.502	−0.464
Method(OT):NumNodes(7)	0.405	0.016	0.374	0.436
Method(OT-A):NumNodes(7)	−0.121	0.013	−0.147	−0.095
Method(DiP):NumNodes(7)	0.697	0.029	0.640	0.753
Method(CBN):NumNodes(9)	0.277	0.009	0.260	0.294
Method(CBN-A):NumNodes(9)	0.291	0.009	0.275	0.308
Method(OT):NumNodes(9)	−0.308	0.016	−0.340	−0.276
Method(OT-A):NumNodes(9)	0.113	0.013	0.088	0.137
Method(DiP):NumNodes(9)	−0.481	0.024	−0.529	−0.433
S.Time(last):S.Type(singleC)	0.016	0.004	0.008	0.024
S.Time(last):S.Type(wholeT_0.01)	−0.020	0.004	−0.028	−0.012
S.Time(last):Model(Bozic)	−0.266	0.005	−0.276	−0.257
S.Time(last):Model(McF_4)	−0.022	0.005	−0.032	−0.012
S.Time(last):Model(McF_6)	0.569	0.005	0.558	0.579
S.Time(last):Conjunction(No)	−0.004	0.003	−0.010	0.001
S.Time(last):sh(0)	0.033	0.003	0.027	0.038
S.Time(last):NumNodes(7)	0.001	0.005	−0.009	0.010
S.Time(last):NumNodes(9)	0.041	0.004	0.033	0.049
S.Type(singleC):Model(Bozic)	−0.004	0.007	−0.017	0.010
S.Type(wholeT_0.01):Model(Bozic)	−0.017	0.007	−0.030	−0.003
S.Type(singleC):Model(McF_4)	−0.002	0.007	−0.016	0.012
S.Type(wholeT_0.01):Model(McF_4)	0.049	0.007	0.035	0.064

Supplementary Table 30: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
S.Type(singleC):Model(McF_6)	0.003	0.008	−0.012	0.018
S.Type(wholeT_0.01):Model(McF_6)	−0.037	0.008	−0.052	−0.023
S.Type(singleC):Conjunction(No)	0.006	0.004	−0.002	0.014
S.Type(wholeT_0.01):Conjunction(No)	−0.004	0.004	−0.012	0.004
S.Type(singleC):sh(0)	0.005	0.004	−0.003	0.013
S.Type(wholeT_0.01):sh(0)	−0.020	0.004	−0.028	−0.012
S.Type(singleC):NumNodes(7)	−0.073	0.007	−0.086	−0.059
S.Type(wholeT_0.01):NumNodes(7)	0.107	0.007	0.094	0.121
S.Type(singleC):NumNodes(9)	0.036	0.006	0.025	0.048
S.Type(wholeT_0.01):NumNodes(9)	−0.041	0.006	−0.053	−0.029
Model(Bozic):Conjunction(No)	0.015	0.005	0.005	0.024
Model(McF_4):Conjunction(No)	−0.023	0.005	−0.033	−0.013
Model(McF_6):Conjunction(No)	−0.016	0.005	−0.027	−0.006
Model(Bozic):sh(0)	0.115	0.005	0.106	0.125
Model(McF_4):sh(0)	−0.107	0.005	−0.117	−0.097
Model(McF_6):sh(0)	−0.090	0.005	−0.100	−0.079
Model(Bozic):NumNodes(7)	0.069	0.008	0.053	0.084
Model(McF_4):NumNodes(7)	0.034	0.009	0.017	0.052
Model(McF_6):NumNodes(7)	−0.161	0.009	−0.179	−0.142
Model(Bozic):NumNodes(9)	−0.021	0.007	−0.035	−0.008
Model(McF_4):NumNodes(9)	−0.033	0.008	−0.048	−0.018
Model(McF_6):NumNodes(9)	0.046	0.008	0.030	0.062
Conjunction(No):sh(0)	−0.001	0.003	−0.007	0.004
Conjunction(No):NumNodes(7)	0.000	0.005	−0.010	0.009
Conjunction(No):NumNodes(9)	0.090	0.004	0.082	0.099
sh(0):NumNodes(7)	−0.061	0.005	−0.070	−0.052
sh(0):NumNodes(9)	0.030	0.004	0.022	0.038

12.1.3 Fit for PND, Drivers Known

Supplementary Table 31: Model fit for metric 'PND' when there are no passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	0.671	0.005	0.662	0.681
S.Size(100)	0.809	0.007	0.796	0.823
S.Size(1000)	−1.021	0.006	−1.032	−1.009
Method(CBN)	−1.466	0.006	−1.477	−1.455
Method(CBN-A)	−1.513	0.006	−1.525	−1.502
Method(OT)	−0.720	0.006	−0.732	−0.709
Method(OT-A)	−1.369	0.006	−1.382	−1.357
Method(DiP)	2.871	0.014	2.844	2.898
S.Time(last)	−0.023	0.004	−0.030	−0.015
S.Type(singleC)	0.132	0.006	0.121	0.143
S.Type(wholeT_0.01)	−0.331	0.006	−0.342	−0.321
Model(Bozic)	0.438	0.007	0.424	0.452
Model(McF_4)	−0.328	0.007	−0.342	−0.315
Model(McF_6)	−1.145	0.007	−1.159	−1.132
Conjunction(No)	−0.416	0.004	−0.424	−0.408
sh(0)	0.047	0.004	0.039	0.055
NumNodes(7)	0.350	0.006	0.338	0.361
NumNodes(9)	−0.007	0.006	−0.018	0.004
S.Size(100):Method(CBN)	−0.798	0.008	−0.813	−0.783
S.Size(1000):Method(CBN)	0.995	0.007	0.981	1.009
S.Size(100):Method(CBN-A)	−0.776	0.008	−0.791	−0.760
S.Size(1000):Method(CBN-A)	0.974	0.007	0.960	0.988
S.Size(100):Method(OT)	−0.457	0.008	−0.473	−0.442
S.Size(1000):Method(OT)	0.590	0.007	0.576	0.605
S.Size(100):Method(OT-A)	−0.425	0.008	−0.441	−0.409
S.Size(1000):Method(OT-A)	0.538	0.008	0.523	0.553
S.Size(100):Method(DiP)	1.044	0.017	1.010	1.078
S.Size(1000):Method(DiP)	−1.479	0.013	−1.504	−1.453
S.Size(100):S.Time(last)	−0.049	0.005	−0.059	−0.038
S.Size(1000):S.Time(last)	0.066	0.005	0.055	0.076
S.Size(100):S.Type(singleC)	0.017	0.008	0.002	0.032
S.Size(1000):S.Type(singleC)	−0.023	0.007	−0.038	−0.008
S.Size(100):S.Type(wholeT_0.01)	−0.032	0.008	−0.047	−0.017
S.Size(1000):S.Type(wholeT_0.01)	0.049	0.007	0.034	0.064
S.Size(100):Model(Bozic)	0.080	0.009	0.062	0.098
S.Size(1000):Model(Bozic)	−0.123	0.009	−0.141	−0.104
S.Size(100):Model(McF_4)	−0.058	0.009	−0.076	−0.040
S.Size(1000):Model(McF_4)	0.098	0.009	0.080	0.115
S.Size(100):Model(McF_6)	−0.069	0.009	−0.087	−0.050
S.Size(1000):Model(McF_6)	0.098	0.009	0.080	0.116
S.Size(100):Conjunction(No)	0.069	0.005	0.058	0.079
S.Size(1000):Conjunction(No)	−0.103	0.005	−0.113	−0.093
S.Size(100):sh(0)	−0.030	0.005	−0.041	−0.020
S.Size(1000):sh(0)	0.070	0.005	0.059	0.080
S.Size(100):NumNodes(7)	−0.084	0.008	−0.099	−0.068
S.Size(1000):NumNodes(7)	0.117	0.008	0.102	0.132
S.Size(100):NumNodes(9)	0.018	0.008	0.003	0.033
S.Size(1000):NumNodes(9)	−0.027	0.008	−0.041	−0.012
Method(CBN):S.Time(last)	0.297	0.005	0.288	0.307
Method(CBN-A):S.Time(last)	0.407	0.005	0.398	0.417
Method(OT):S.Time(last)	0.138	0.005	0.128	0.148
Method(OT-A):S.Time(last)	−0.315	0.005	−0.325	−0.305
Method(DiP):S.Time(last)	−0.073	0.008	−0.088	−0.058
Method(CBN):S.Type(singleC)	−0.143	0.007	−0.156	−0.130

Supplementary Table 31: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(CBN-A):S.Type(singleC)	−0.103	0.007	−0.116	−0.089
Method(OT):S.Type(singleC)	−0.075	0.007	−0.089	−0.061
Method(OT-A):S.Type(singleC)	−0.048	0.007	−0.062	−0.033
Method(DiP):S.Type(singleC)	0.165	0.011	0.143	0.186
Method(CBN):S.Type(wholeT_0.01)	0.321	0.007	0.307	0.334
Method(CBN-A):S.Type(wholeT_0.01)	0.290	0.007	0.277	0.303
Method(OT):S.Type(wholeT_0.01)	0.140	0.007	0.127	0.154
Method(OT-A):S.Type(wholeT_0.01)	0.076	0.007	0.062	0.091
Method(DiP):S.Type(wholeT_0.01)	−0.369	0.010	−0.389	−0.348
Method(CBN):Model(Bozic)	−0.586	0.009	−0.603	−0.569
Method(CBN-A):Model(Bozic)	−0.539	0.009	−0.556	−0.522
Method(OT):Model(Bozic)	0.002	0.009	−0.015	0.020
Method(OT-A):Model(Bozic)	0.168	0.009	0.151	0.186
Method(DiP):Model(Bozic)	0.415	0.015	0.385	0.445
Method(CBN):Model(McF_4)	0.462	0.008	0.446	0.478
Method(CBN-A):Model(McF_4)	0.545	0.008	0.529	0.561
Method(OT):Model(McF_4)	−0.065	0.008	−0.081	−0.048
Method(OT-A):Model(McF_4)	−0.021	0.009	−0.039	−0.004
Method(DiP):Model(McF_4)	−0.466	0.013	−0.491	−0.441
Method(CBN):Model(McF_6)	1.261	0.009	1.244	1.278
Method(CBN-A):Model(McF_6)	1.130	0.009	1.113	1.147
Method(OT):Model(McF_6)	0.011	0.009	−0.007	0.028
Method(OT-A):Model(McF_6)	−0.426	0.010	−0.447	−0.406
Method(DiP):Model(McF_6)	−0.703	0.013	−0.729	−0.677
Method(CBN):Conjunction(No)	0.344	0.005	0.334	0.353
Method(CBN-A):Conjunction(No)	0.333	0.005	0.323	0.342
Method(OT):Conjunction(No)	−0.214	0.005	−0.224	−0.204
Method(OT-A):Conjunction(No)	−0.407	0.006	−0.418	−0.396
Method(DiP):Conjunction(No)	0.005	0.008	−0.010	0.020
Method(CBN):sh(0)	0.069	0.005	0.060	0.079
Method(CBN-A):sh(0)	0.061	0.005	0.052	0.071
Method(OT):sh(0)	0.214	0.005	0.204	0.224
Method(OT-A):sh(0)	0.260	0.005	0.250	0.270
Method(DiP):sh(0)	−0.396	0.008	−0.411	−0.381
Method(CBN):NumNodes(7)	0.112	0.007	0.097	0.126
Method(CBN-A):NumNodes(7)	−0.070	0.007	−0.085	−0.056
Method(OT):NumNodes(7)	0.332	0.008	0.317	0.347
Method(OT-A):NumNodes(7)	−0.580	0.008	−0.596	−0.564
Method(DiP):NumNodes(7)	0.634	0.014	0.606	0.661
Method(CBN):NumNodes(9)	−0.143	0.007	−0.157	−0.129
Method(CBN-A):NumNodes(9)	−0.049	0.007	−0.063	−0.035
Method(OT):NumNodes(9)	−0.046	0.007	−0.060	−0.032
Method(OT-A):NumNodes(9)	0.320	0.008	0.305	0.335
Method(DiP):NumNodes(9)	−0.279	0.011	−0.302	−0.257
S.Time(last):S.Type(singleC)	−0.015	0.005	−0.026	−0.005
S.Time(last):S.Type(wholeT_0.01)	0.040	0.005	0.029	0.050
S.Time(last):Model(Bozic)	−0.168	0.006	−0.180	−0.155
S.Time(last):Model(McF_4)	−0.040	0.006	−0.053	−0.028
S.Time(last):Model(McF_6)	0.449	0.007	0.436	0.462
S.Time(last):Conjunction(No)	0.010	0.004	0.003	0.017
S.Time(last):sh(0)	0.013	0.004	0.005	0.020
S.Time(last):NumNodes(7)	0.331	0.005	0.320	0.341
S.Time(last):NumNodes(9)	−0.141	0.005	−0.151	−0.130
S.Type(singleC):Model(Bozic)	0.054	0.009	0.036	0.072
S.Type(wholeT_0.01):Model(Bozic)	−0.155	0.009	−0.173	−0.137
S.Type(singleC):Model(McF_4)	−0.028	0.009	−0.045	−0.010
S.Type(wholeT_0.01):Model(McF_4)	0.089	0.009	0.072	0.107

Supplementary Table 31: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
S.Type(singleC):Model(McF_6)	−0.101	0.009	−0.119	−0.083
S.Type(wholeT_0.01):Model(McF_6)	0.239	0.009	0.221	0.257
S.Type(singleC):Conjunction(No)	0.015	0.005	0.005	0.025
S.Type(wholeT_0.01):Conjunction(No)	−0.026	0.005	−0.036	−0.016
S.Type(singleC):sh(0)	−0.004	0.005	−0.015	0.006
S.Type(wholeT_0.01):sh(0)	−0.019	0.005	−0.030	−0.009
S.Type(singleC):NumNodes(7)	−0.058	0.008	−0.073	−0.043
S.Type(wholeT_0.01):NumNodes(7)	0.125	0.008	0.110	0.140
S.Type(singleC):NumNodes(9)	0.035	0.007	0.021	0.050
S.Type(wholeT_0.01):NumNodes(9)	−0.073	0.007	−0.088	−0.059
Model(Bozic):Conjunction(No)	0.043	0.006	0.030	0.056
Model(McF_4):Conjunction(No)	−0.116	0.006	−0.129	−0.104
Model(McF_6):Conjunction(No)	−0.028	0.007	−0.040	−0.015
Model(Bozic):sh(0)	0.244	0.006	0.231	0.256
Model(McF_4):sh(0)	−0.300	0.006	−0.313	−0.288
Model(McF_6):sh(0)	−0.257	0.007	−0.270	−0.244
Model(Bozic):NumNodes(7)	−0.178	0.009	−0.196	−0.159
Model(McF_4):NumNodes(7)	0.250	0.009	0.232	0.268
Model(McF_6):NumNodes(7)	0.139	0.009	0.121	0.158
Model(Bozic):NumNodes(9)	0.034	0.009	0.016	0.052
Model(McF_4):NumNodes(9)	−0.229	0.009	−0.247	−0.212
Model(McF_6):NumNodes(9)	0.111	0.009	0.093	0.129
Conjunction(No):sh(0)	0.051	0.004	0.044	0.059
Conjunction(No):NumNodes(7)	0.015	0.005	0.004	0.026
Conjunction(No):NumNodes(9)	−0.174	0.005	−0.185	−0.164
sh(0):NumNodes(7)	−0.105	0.005	−0.116	−0.095
sh(0):NumNodes(9)	0.056	0.005	0.046	0.066

12.1.4 Fit for FPF, Drivers Known

Supplementary Table 32: Model fit for metric 'FPF' when there are no passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	−3.904	0.005	−3.914	−3.894
S.Size(100)	−0.093	0.006	−0.105	−0.082
S.Size(1000)	0.079	0.006	0.068	0.090
Method(CBN)	2.073	0.005	2.062	2.083
Method(CBN-A)	1.964	0.005	1.953	1.974
Method(OT)	−1.083	0.012	−1.106	−1.060
Method(OT-A)	−0.511	0.009	−0.529	−0.493
Method(DiP)	−1.487	0.014	−1.514	−1.459
S.Time(last)	−0.100	0.004	−0.108	−0.091
S.Type(singleC)	−0.194	0.006	−0.206	−0.182
S.Type(wholeT_0.01)	0.412	0.006	0.401	0.423
Model(Bozic)	0.450	0.007	0.437	0.464
Model(McF_4)	−0.609	0.009	−0.627	−0.590
Model(McF_6)	−0.011	0.008	−0.025	0.004
Conjunction(No)	0.016	0.004	0.008	0.024
sh(0)	−0.151	0.004	−0.159	−0.143
NumNodes(7)	0.071	0.006	0.059	0.083
NumNodes(9)	−0.237	0.006	−0.249	−0.225
S.Size(100):Method(CBN)	0.216	0.006	0.204	0.227
S.Size(1000):Method(CBN)	−0.221	0.006	−0.232	−0.211
S.Size(100):Method(CBN-A)	0.227	0.006	0.216	0.239
S.Size(1000):Method(CBN-A)	−0.242	0.006	−0.253	−0.231
S.Size(100):Method(OT)	0.090	0.012	0.067	0.113
S.Size(1000):Method(OT)	−0.061	0.012	−0.084	−0.038
S.Size(100):Method(OT-A)	0.083	0.010	0.063	0.102
S.Size(1000):Method(OT-A)	−0.038	0.010	−0.058	−0.019
S.Size(100):Method(DiP)	−0.320	0.015	−0.350	−0.290
S.Size(1000):Method(DiP)	0.349	0.013	0.324	0.374
S.Size(100):S.Time(last)	−0.055	0.004	−0.063	−0.047
S.Size(1000):S.Time(last)	0.074	0.004	0.066	0.082
S.Size(100):S.Type(singleC)	−0.001	0.006	−0.013	0.010
S.Size(1000):S.Type(singleC)	0.007	0.006	−0.005	0.018
S.Size(100):S.Type(wholeT_0.01)	0.012	0.006	0.001	0.024
S.Size(1000):S.Type(wholeT_0.01)	−0.019	0.006	−0.031	−0.008
S.Size(100):Model(Bozic)	−0.017	0.007	−0.031	−0.003
S.Size(1000):Model(Bozic)	0.042	0.007	0.028	0.056
S.Size(100):Model(McF_4)	−0.083	0.007	−0.097	−0.068
S.Size(1000):Model(McF_4)	0.110	0.007	0.095	0.124
S.Size(100):Model(McF_6)	0.117	0.008	0.102	0.132
S.Size(1000):Model(McF_6)	−0.180	0.008	−0.196	−0.164
S.Size(100):Conjunction(No)	0.007	0.004	−0.001	0.016
S.Size(1000):Conjunction(No)	−0.011	0.004	−0.020	−0.003
S.Size(100):sh(0)	−0.006	0.004	−0.014	0.002
S.Size(1000):sh(0)	0.015	0.004	0.006	0.023
S.Size(100):NumNodes(7)	0.052	0.007	0.039	0.065
S.Size(1000):NumNodes(7)	−0.049	0.007	−0.063	−0.036
S.Size(100):NumNodes(9)	−0.038	0.006	−0.050	−0.027
S.Size(1000):NumNodes(9)	0.045	0.006	0.033	0.057
Method(CBN):S.Time(last)	0.140	0.004	0.132	0.148
Method(CBN-A):S.Time(last)	0.075	0.004	0.067	0.084
Method(OT):S.Time(last)	−0.317	0.009	−0.335	−0.298
Method(OT-A):S.Time(last)	0.070	0.007	0.056	0.085
Method(DiP):S.Time(last)	−0.129	0.010	−0.149	−0.109
Method(CBN):S.Type(singleC)	0.217	0.006	0.205	0.229

Supplementary Table 32: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(CBN-A):S.Type(singleC)	0.234	0.006	0.222	0.246
Method(OT):S.Type(singleC)	−0.177	0.014	−0.205	−0.149
Method(OT-A):S.Type(singleC)	−0.094	0.011	−0.116	−0.072
Method(DiP):S.Type(singleC)	−0.087	0.016	−0.118	−0.057
Method(CBN):S.Type(wholeT_0.01)	−0.509	0.005	−0.519	−0.498
Method(CBN-A):S.Type(wholeT_0.01)	−0.547	0.005	−0.557	−0.536
Method(OT):S.Type(wholeT_0.01)	0.336	0.011	0.314	0.358
Method(OT-A):S.Type(wholeT_0.01)	0.176	0.009	0.158	0.195
Method(DiP):S.Type(wholeT_0.01)	0.290	0.013	0.265	0.315
Method(CBN):Model(Bozic)	−0.197	0.007	−0.210	−0.184
Method(CBN-A):Model(Bozic)	−0.141	0.007	−0.154	−0.128
Method(OT):Model(Bozic)	0.209	0.013	0.183	0.235
Method(OT-A):Model(Bozic)	−0.080	0.012	−0.104	−0.056
Method(DiP):Model(Bozic)	0.252	0.015	0.223	0.281
Method(CBN):Model(McF_4)	0.661	0.009	0.643	0.679
Method(CBN-A):Model(McF_4)	0.627	0.009	0.609	0.645
Method(OT):Model(McF_4)	−0.140	0.020	−0.180	−0.100
Method(OT-A):Model(McF_4)	−0.376	0.019	−0.413	−0.339
Method(DiP):Model(McF_4)	−0.167	0.023	−0.212	−0.122
Method(CBN):Model(McF_6)	−0.720	0.008	−0.735	−0.705
Method(CBN-A):Model(McF_6)	−0.841	0.008	−0.857	−0.825
Method(OT):Model(McF_6)	−0.074	0.017	−0.107	−0.041
Method(OT-A):Model(McF_6)	0.746	0.012	0.722	0.769
Method(DiP):Model(McF_6)	−0.094	0.019	−0.131	−0.057
Method(CBN):Conjunction(No)	0.001	0.004	−0.006	0.009
Method(CBN-A):Conjunction(No)	−0.017	0.004	−0.025	−0.009
Method(OT):Conjunction(No)	−0.017	0.008	−0.033	0.000
Method(OT-A):Conjunction(No)	−0.007	0.007	−0.021	0.007
Method(DiP):Conjunction(No)	0.046	0.009	0.027	0.064
Method(CBN):sh(0)	0.276	0.004	0.268	0.284
Method(CBN-A):sh(0)	0.290	0.004	0.281	0.298
Method(OT):sh(0)	−0.060	0.009	−0.076	−0.043
Method(OT-A):sh(0)	−0.003	0.007	−0.017	0.011
Method(DiP):sh(0)	−0.345	0.010	−0.366	−0.325
Method(CBN):NumNodes(7)	−0.512	0.007	−0.526	−0.499
Method(CBN-A):NumNodes(7)	−0.515	0.007	−0.529	−0.501
Method(OT):NumNodes(7)	0.457	0.012	0.433	0.482
Method(OT-A):NumNodes(7)	0.123	0.011	0.101	0.145
Method(DiP):NumNodes(7)	0.236	0.015	0.207	0.265
Method(CBN):NumNodes(9)	0.341	0.006	0.329	0.354
Method(CBN-A):NumNodes(9)	0.336	0.007	0.323	0.349
Method(OT):NumNodes(9)	−0.360	0.015	−0.389	−0.331
Method(OT-A):NumNodes(9)	0.008	0.011	−0.013	0.030
Method(DiP):NumNodes(9)	−0.277	0.016	−0.309	−0.245
S.Time(last):S.Type(singleC)	0.029	0.004	0.021	0.038
S.Time(last):S.Type(wholeT_0.01)	−0.056	0.004	−0.065	−0.048
S.Time(last):Model(Bozic)	−0.241	0.005	−0.251	−0.231
S.Time(last):Model(McF_4)	−0.006	0.005	−0.017	0.004
S.Time(last):Model(McF_6)	0.460	0.006	0.449	0.472
S.Time(last):Conjunction(No)	−0.006	0.003	−0.012	0.000
S.Time(last):sh(0)	0.034	0.003	0.028	0.040
S.Time(last):NumNodes(7)	−0.088	0.005	−0.098	−0.079
S.Time(last):NumNodes(9)	0.072	0.004	0.064	0.081
S.Type(singleC):Model(Bozic)	−0.023	0.007	−0.037	−0.009
S.Type(wholeT_0.01):Model(Bozic)	0.034	0.007	0.020	0.048
S.Type(singleC):Model(McF_4)	0.003	0.007	−0.012	0.017
S.Type(wholeT_0.01):Model(McF_4)	0.025	0.007	0.010	0.039

Supplementary Table 32: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
S.Type(singleC):Model(McF_6)	0.039	0.008	0.023	0.054
S.Type(wholeT_0.01):Model(McF_6)	−0.115	0.008	−0.130	−0.099
S.Type(singleC):Conjunction(No)	0.005	0.004	−0.003	0.013
S.Type(wholeT_0.01):Conjunction(No)	−0.003	0.004	−0.011	0.005
S.Type(singleC):sh(0)	0.004	0.004	−0.005	0.012
S.Type(wholeT_0.01):sh(0)	−0.011	0.004	−0.019	−0.003
S.Type(singleC):NumNodes(7)	−0.060	0.007	−0.073	−0.046
S.Type(wholeT_0.01):NumNodes(7)	0.067	0.007	0.054	0.080
S.Type(singleC):NumNodes(9)	0.025	0.006	0.013	0.037
S.Type(wholeT_0.01):NumNodes(9)	−0.014	0.006	−0.026	−0.002
Model(Bozic):Conjunction(No)	0.027	0.005	0.017	0.036
Model(McF_4):Conjunction(No)	−0.013	0.005	−0.023	−0.003
Model(McF_6):Conjunction(No)	−0.052	0.006	−0.063	−0.041
Model(Bozic):sh(0)	0.070	0.005	0.060	0.080
Model(McF_4):sh(0)	−0.087	0.005	−0.097	−0.077
Model(McF_6):sh(0)	−0.023	0.006	−0.034	−0.012
Model(Bozic):NumNodes(7)	0.132	0.008	0.116	0.147
Model(McF_4):NumNodes(7)	−0.125	0.009	−0.142	−0.108
Model(McF_6):NumNodes(7)	−0.132	0.009	−0.150	−0.113
Model(Bozic):NumNodes(9)	−0.042	0.007	−0.056	−0.028
Model(McF_4):NumNodes(9)	0.061	0.008	0.046	0.076
Model(McF_6):NumNodes(9)	0.009	0.008	−0.007	0.025
Conjunction(No):sh(0)	−0.003	0.003	−0.009	0.003
Conjunction(No):NumNodes(7)	−0.029	0.005	−0.038	−0.019
Conjunction(No):NumNodes(9)	0.037	0.004	0.029	0.046
sh(0):NumNodes(7)	−0.022	0.005	−0.031	−0.013
sh(0):NumNodes(9)	0.007	0.004	−0.001	0.016

12.1.5 Fit for 'Inferred edges', Drivers Known

Supplementary Table 33: Model fit for metric 'Inferred edges' when there are no passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	1.662	0.002	1.658	1.666
S.Size(100)	−0.344	0.003	−0.350	−0.338
S.Size(1000)	0.403	0.002	0.398	0.407
Method(CBN)	1.138	0.003	1.133	1.143
Method(CBN-A)	1.105	0.003	1.100	1.110
Method(OT)	0.122	0.003	0.115	0.128
Method(OT-A)	0.348	0.003	0.342	0.354
Method(DiP)	−1.582	0.007	−1.596	−1.568
S.Time(last)	−0.023	0.002	−0.026	−0.020
S.Type(singleC)	−0.079	0.002	−0.084	−0.075
S.Type(wholeT_0.01)	0.183	0.002	0.178	0.187
Model(Bozic)	−0.042	0.003	−0.048	−0.037
Model(McF_4)	0.065	0.003	0.059	0.070
Model(McF_6)	0.326	0.003	0.321	0.331
Conjunction(No)	0.051	0.002	0.048	0.055
sh(0)	−0.017	0.002	−0.020	−0.014
NumNodes(7)	−0.458	0.003	−0.463	−0.453
NumNodes(9)	−0.057	0.002	−0.061	−0.052
S.Size(100):Method(CBN)	0.393	0.004	0.386	0.400
S.Size(1000):Method(CBN)	−0.459	0.003	−0.465	−0.454
S.Size(100):Method(CBN-A)	0.395	0.004	0.388	0.402
S.Size(1000):Method(CBN-A)	−0.464	0.003	−0.470	−0.459
S.Size(100):Method(OT)	0.228	0.004	0.219	0.237
S.Size(1000):Method(OT)	−0.262	0.004	−0.270	−0.255
S.Size(100):Method(OT-A)	0.246	0.004	0.238	0.255
S.Size(1000):Method(OT-A)	−0.279	0.004	−0.286	−0.272
S.Size(100):Method(DiP)	−0.621	0.010	−0.642	−0.601
S.Size(1000):Method(DiP)	0.819	0.007	0.806	0.832
S.Size(100):S.Time(last)	−0.005	0.002	−0.009	−0.002
S.Size(1000):S.Time(last)	0.007	0.002	0.004	0.011
S.Size(100):S.Type(singleC)	−0.008	0.002	−0.013	−0.004
S.Size(1000):S.Type(singleC)	0.017	0.002	0.012	0.022
S.Size(100):S.Type(wholeT_0.01)	0.020	0.002	0.015	0.024
S.Size(1000):S.Type(wholeT_0.01)	−0.036	0.002	−0.041	−0.032
S.Size(100):Model(Bozic)	−0.017	0.003	−0.022	−0.011
S.Size(1000):Model(Bozic)	0.036	0.003	0.030	0.042
S.Size(100):Model(McF_4)	−0.020	0.003	−0.026	−0.014
S.Size(1000):Model(McF_4)	0.031	0.003	0.025	0.036
S.Size(100):Model(McF_6)	0.052	0.003	0.046	0.058
S.Size(1000):Model(McF_6)	−0.093	0.003	−0.099	−0.087
S.Size(100):Conjunction(No)	0.002	0.002	−0.001	0.006
S.Size(1000):Conjunction(No)	−0.005	0.002	−0.009	−0.002
S.Size(100):sh(0)	−0.002	0.002	−0.005	0.001
S.Size(1000):sh(0)	−0.003	0.002	−0.006	0.000
S.Size(100):NumNodes(7)	0.022	0.003	0.017	0.028
S.Size(1000):NumNodes(7)	−0.025	0.003	−0.030	−0.020
S.Size(100):NumNodes(9)	−0.017	0.003	−0.022	−0.012
S.Size(1000):NumNodes(9)	0.023	0.002	0.018	0.027
Method(CBN):S.Time(last)	−0.043	0.002	−0.047	−0.039
Method(CBN-A):S.Time(last)	−0.088	0.002	−0.092	−0.084
Method(OT):S.Time(last)	−0.070	0.003	−0.075	−0.064
Method(OT-A):S.Time(last)	0.119	0.003	0.114	0.124
Method(DiP):S.Time(last)	−0.074	0.004	−0.083	−0.066
Method(CBN):S.Type(singleC)	0.101	0.003	0.095	0.107

Supplementary Table 33: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(CBN-A):S.Type(singleC)	0.103	0.003	0.097	0.109
Method(OT):S.Type(singleC)	0.011	0.004	0.003	0.019
Method(OT-A):S.Type(singleC)	0.011	0.004	0.004	0.018
Method(DiP):S.Type(singleC)	−0.116	0.007	−0.129	−0.103
Method(CBN):S.Type(wholeT_0.01)	−0.240	0.003	−0.245	−0.234
Method(CBN-A):S.Type(wholeT_0.01)	−0.252	0.003	−0.257	−0.246
Method(OT):S.Type(wholeT_0.01)	−0.017	0.004	−0.025	−0.010
Method(OT-A):S.Type(wholeT_0.01)	−0.018	0.003	−0.025	−0.011
Method(DiP):S.Type(wholeT_0.01)	0.272	0.006	0.261	0.284
Method(CBN):Model(Bozic)	0.168	0.004	0.160	0.175
Method(CBN-A):Model(Bozic)	0.184	0.004	0.176	0.191
Method(OT):Model(Bozic)	−0.007	0.005	−0.017	0.003
Method(OT-A):Model(Bozic)	−0.058	0.005	−0.067	−0.048
Method(DiP):Model(Bozic)	−0.105	0.009	−0.121	−0.088
Method(CBN):Model(McF_4)	−0.088	0.004	−0.095	−0.082
Method(CBN-A):Model(McF_4)	−0.119	0.004	−0.127	−0.112
Method(OT):Model(McF_4)	0.043	0.005	0.033	0.052
Method(OT-A):Model(McF_4)	0.003	0.004	−0.006	0.012
Method(DiP):Model(McF_4)	0.090	0.008	0.075	0.105
Method(CBN):Model(McF_6)	−0.621	0.004	−0.628	−0.614
Method(CBN-A):Model(McF_6)	−0.647	0.004	−0.654	−0.640
Method(OT):Model(McF_6)	0.025	0.004	0.016	0.033
Method(OT-A):Model(McF_6)	0.137	0.004	0.129	0.144
Method(DiP):Model(McF_6)	0.405	0.007	0.391	0.418
Method(CBN):Conjunction(No)	−0.087	0.002	−0.091	−0.083
Method(CBN-A):Conjunction(No)	−0.097	0.002	−0.101	−0.093
Method(OT):Conjunction(No)	0.037	0.003	0.032	0.042
Method(OT-A):Conjunction(No)	0.032	0.003	0.027	0.037
Method(DiP):Conjunction(No)	0.069	0.004	0.061	0.078
Method(CBN):sh(0)	0.072	0.002	0.068	0.076
Method(CBN-A):sh(0)	0.078	0.002	0.074	0.082
Method(OT):sh(0)	−0.103	0.003	−0.108	−0.097
Method(OT-A):sh(0)	−0.095	0.003	−0.100	−0.090
Method(DiP):sh(0)	0.053	0.004	0.045	0.062
Method(CBN):NumNodes(7)	−0.200	0.004	−0.208	−0.193
Method(CBN-A):NumNodes(7)	−0.163	0.004	−0.170	−0.156
Method(OT):NumNodes(7)	0.007	0.005	−0.002	0.016
Method(OT-A):NumNodes(7)	0.297	0.004	0.289	0.305
Method(DiP):NumNodes(7)	−0.180	0.008	−0.196	−0.164
Method(CBN):NumNodes(9)	0.126	0.003	0.120	0.133
Method(CBN-A):NumNodes(9)	0.105	0.003	0.099	0.112
Method(OT):NumNodes(9)	−0.024	0.004	−0.032	−0.016
Method(OT-A):NumNodes(9)	−0.121	0.004	−0.128	−0.113
Method(DiP):NumNodes(9)	0.028	0.007	0.015	0.042
S.Time(last):S.Type(singleC)	0.016	0.002	0.013	0.019
S.Time(last):S.Type(wholeT_0.01)	−0.033	0.002	−0.036	−0.030
S.Time(last):Model(Bozic)	−0.026	0.002	−0.030	−0.021
S.Time(last):Model(McF_4)	0.024	0.002	0.020	0.028
S.Time(last):Model(McF_6)	0.008	0.002	0.004	0.012
S.Time(last):Conjunction(No)	−0.003	0.001	−0.005	0.000
S.Time(last):sh(0)	0.009	0.001	0.007	0.011
S.Time(last):NumNodes(7)	−0.133	0.002	−0.137	−0.129
S.Time(last):NumNodes(9)	0.067	0.002	0.064	0.071
S.Type(singleC):Model(Bozic)	−0.030	0.003	−0.036	−0.024
S.Type(wholeT_0.01):Model(Bozic)	0.067	0.003	0.061	0.072
S.Type(singleC):Model(McF_4)	0.017	0.003	0.011	0.022
S.Type(wholeT_0.01):Model(McF_4)	−0.033	0.003	−0.039	−0.027

Supplementary Table 33: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
S.Type(singleC):Model(McF_6)	0.044	0.003	0.038	0.050
S.Type(wholeT_0.01):Model(McF_6)	−0.107	0.003	−0.112	−0.101
S.Type(singleC):Conjunction(No)	0.002	0.002	−0.001	0.006
S.Type(wholeT_0.01):Conjunction(No)	−0.007	0.002	−0.010	−0.004
S.Type(singleC):sh(0)	0.003	0.002	0.000	0.006
S.Type(wholeT_0.01):sh(0)	−0.003	0.002	−0.006	0.001
S.Type(singleC):NumNodes(7)	−0.009	0.003	−0.014	−0.003
S.Type(wholeT_0.01):NumNodes(7)	0.005	0.003	0.000	0.010
S.Type(singleC):NumNodes(9)	0.002	0.002	−0.003	0.007
S.Type(wholeT_0.01):NumNodes(9)	0.007	0.002	0.002	0.011
Model(Bozic):Conjunction(No)	0.020	0.002	0.016	0.024
Model(McF_4):Conjunction(No)	0.018	0.002	0.014	0.022
Model(McF_6):Conjunction(No)	−0.067	0.002	−0.071	−0.063
Model(Bozic):sh(0)	−0.037	0.002	−0.041	−0.033
Model(McF_4):sh(0)	0.045	0.002	0.041	0.049
Model(McF_6):sh(0)	0.052	0.002	0.048	0.056
Model(Bozic):NumNodes(7)	0.078	0.003	0.071	0.084
Model(McF_4):NumNodes(7)	−0.118	0.003	−0.125	−0.112
Model(McF_6):NumNodes(7)	−0.026	0.003	−0.033	−0.019
Model(Bozic):NumNodes(9)	−0.036	0.003	−0.042	−0.030
Model(McF_4):NumNodes(9)	0.075	0.003	0.069	0.081
Model(McF_6):NumNodes(9)	−0.008	0.003	−0.014	−0.002
Conjunction(No):sh(0)	−0.003	0.001	−0.006	−0.001
Conjunction(No):NumNodes(7)	−0.014	0.002	−0.018	−0.010
Conjunction(No):NumNodes(9)	0.011	0.002	0.007	0.014
sh(0):NumNodes(7)	0.006	0.002	0.002	0.009
sh(0):NumNodes(9)	−0.005	0.002	−0.008	−0.001

12.2 Drivers Unknown

12.2.1 Fit for Diff, Drivers Unknown

Supplementary Table 34: Model fit for metric 'Diff' when there are passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	2.157	0.001	2.156	2.159
S.Size(100)	0.120	0.001	0.119	0.122
S.Size(1000)	−0.162	0.001	−0.164	−0.160
Filter(J5)	−0.043	0.001	−0.045	−0.041
Filter(J1)	−0.039	0.001	−0.041	−0.037
Filter(S5)	−0.105	0.001	−0.107	−0.103
Method(CBN)	0.187	0.001	0.185	0.189
Method(CBN-A)	0.133	0.001	0.131	0.135
Method(OT)	−0.167	0.001	−0.170	−0.165
Method(OT-A)	−0.338	0.001	−0.341	−0.336
Method(DiP)	0.128	0.001	0.126	0.131
S.Time(last)	0.061	0.001	0.060	0.063
S.Type(singleC)	−0.027	0.001	−0.029	−0.025
S.Type(wholeT_0.01)	0.054	0.001	0.052	0.056
Model(Bozic)	0.105	0.001	0.103	0.108
Model(McF_4)	−0.045	0.001	−0.047	−0.042
Model(McF_6)	−0.130	0.001	−0.132	−0.127
Conjunction(No)	−0.130	0.001	−0.131	−0.128
sh(0)	−0.046	0.001	−0.047	−0.045
NumNodes(7)	−0.004	0.001	−0.006	−0.002
NumNodes(9)	−0.094	0.001	−0.096	−0.092
S.Size(100):Filter(J5)	−0.074	0.001	−0.076	−0.071
S.Size(1000):Filter(J5)	0.092	0.001	0.089	0.095
S.Size(100):Filter(J1)	0.008	0.001	0.005	0.010
S.Size(1000):Filter(J1)	0.015	0.001	0.013	0.018
S.Size(100):Filter(S5)	−0.014	0.001	−0.017	−0.012
S.Size(1000):Filter(S5)	0.010	0.001	0.008	0.013
S.Size(100):Method(CBN)	−0.068	0.001	−0.071	−0.065
S.Size(1000):Method(CBN)	0.108	0.002	0.105	0.111
S.Size(100):Method(CBN-A)	−0.057	0.002	−0.060	−0.054
S.Size(1000):Method(CBN-A)	0.094	0.002	0.091	0.098
S.Size(100):Method(OT)	−0.033	0.002	−0.037	−0.030
S.Size(1000):Method(OT)	0.065	0.002	0.061	0.068
S.Size(100):Method(OT-A)	−0.026	0.002	−0.029	−0.022
S.Size(1000):Method(OT-A)	0.056	0.002	0.052	0.060
S.Size(100):Method(DiP)	0.054	0.002	0.051	0.057
S.Size(1000):Method(DiP)	−0.113	0.002	−0.116	−0.109
S.Size(100):S.Time(last)	−0.006	0.001	−0.008	−0.004
S.Size(1000):S.Time(last)	0.000	0.001	−0.002	0.002
S.Size(100):S.Type(singleC)	−0.001	0.001	−0.004	0.002
S.Size(1000):S.Type(singleC)	−0.006	0.001	−0.009	−0.003
S.Size(100):S.Type(wholeT_0.01)	0.001	0.001	−0.002	0.003
S.Size(1000):S.Type(wholeT_0.01)	0.007	0.001	0.004	0.009
S.Size(100):Model(Bozic)	−0.031	0.002	−0.034	−0.027
S.Size(1000):Model(Bozic)	0.056	0.002	0.052	0.059
S.Size(100):Model(McF_4)	0.015	0.002	0.012	0.019
S.Size(1000):Model(McF_4)	−0.033	0.002	−0.037	−0.030
S.Size(100):Model(McF_6)	0.084	0.002	0.081	0.088
S.Size(1000):Model(McF_6)	−0.124	0.002	−0.128	−0.120
S.Size(100):Conjunction(No)	0.015	0.001	0.013	0.017
S.Size(1000):Conjunction(No)	−0.022	0.001	−0.024	−0.020
S.Size(100):sh(0)	−0.005	0.001	−0.006	−0.003
S.Size(1000):sh(0)	0.017	0.001	0.015	0.019
S.Size(100):NumNodes(7)	−0.008	0.001	−0.010	−0.005
S.Size(1000):NumNodes(7)	0.013	0.001	0.010	0.016
S.Size(100):NumNodes(9)	−0.001	0.001	−0.004	0.002
S.Size(1000):NumNodes(9)	0.004	0.001	0.001	0.007

Supplementary Table 34: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Filter(J5):Method(CBN)	−0.069	0.002	−0.073	−0.065
Filter(J1):Method(CBN)	−0.040	0.002	−0.044	−0.036
Filter(S5):Method(CBN)	0.028	0.002	0.024	0.031
Filter(J5):Method(CBN-A)	−0.063	0.002	−0.067	−0.059
Filter(J1):Method(CBN-A)	−0.042	0.002	−0.046	−0.038
Filter(S5):Method(CBN-A)	0.021	0.002	0.017	0.024
Filter(J5):Method(OT)	0.107	0.002	0.103	0.111
Filter(J1):Method(OT)	0.045	0.002	0.041	0.049
Filter(S5):Method(OT)	−0.042	0.002	−0.046	−0.037
Filter(J5):Method(OT-A)	0.120	0.002	0.115	0.124
Filter(J1):Method(OT-A)	0.045	0.002	0.041	0.050
Filter(S5):Method(OT-A)	−0.068	0.002	−0.072	−0.063
Filter(J5):Method(DiP)	−0.049	0.002	−0.053	−0.045
Filter(J1):Method(DiP)	−0.003	0.002	−0.006	0.001
Filter(S5):Method(DiP)	0.035	0.002	0.031	0.038
Filter(J5):S.Time(last)	−0.039	0.001	−0.041	−0.038
Filter(J1):S.Time(last)	0.008	0.001	0.006	0.009
Filter(S5):S.Time(last)	0.033	0.001	0.031	0.035
Filter(J5):S.Type(singleC)	0.027	0.001	0.025	0.030
Filter(J1):S.Type(singleC)	−0.012	0.001	−0.014	−0.009
Filter(S5):S.Type(singleC)	0.000	0.001	−0.003	0.002
Filter(J5):S.Type(wholeT_0.01)	−0.061	0.001	−0.064	−0.059
Filter(J1):S.Type(wholeT_0.01)	0.018	0.001	0.015	0.020
Filter(S5):S.Type(wholeT_0.01)	−0.005	0.001	−0.008	−0.003
Filter(J5):Model(Bozic)	−0.056	0.002	−0.059	−0.053
Filter(J1):Model(Bozic)	−0.001	0.002	−0.004	0.002
Filter(S5):Model(Bozic)	0.033	0.002	0.030	0.036
Filter(J5):Model(McF_4)	0.006	0.002	0.003	0.010
Filter(J1):Model(McF_4)	−0.011	0.002	−0.014	−0.008
Filter(S5):Model(McF_4)	−0.029	0.002	−0.033	−0.026
Filter(J5):Model(McF_6)	0.040	0.002	0.036	0.043
Filter(J1):Model(McF_6)	0.003	0.002	0.000	0.006
Filter(S5):Model(McF_6)	−0.041	0.002	−0.045	−0.038
Filter(J5):Conjunction(No)	0.002	0.001	0.000	0.003
Filter(J1):Conjunction(No)	−0.002	0.001	−0.004	0.000
Filter(S5):Conjunction(No)	−0.010	0.001	−0.012	−0.008
Filter(J5):sh(0)	0.047	0.001	0.045	0.049
Filter(J1):sh(0)	0.005	0.001	0.003	0.006
Filter(S5):sh(0)	0.004	0.001	0.002	0.005
Filter(J5):NumNodes(7)	−0.066	0.001	−0.068	−0.063
Filter(J1):NumNodes(7)	−0.023	0.001	−0.025	−0.020
Filter(S5):NumNodes(7)	0.008	0.001	0.005	0.010
Filter(J5):NumNodes(9)	0.033	0.001	0.031	0.036
Filter(J1):NumNodes(9)	−0.003	0.001	−0.005	0.000
Filter(S5):NumNodes(9)	−0.026	0.001	−0.029	−0.024
Method(CBN):S.Time(last)	0.054	0.001	0.052	0.056
Method(CBN-A):S.Time(last)	0.078	0.001	0.076	0.080
Method(OT):S.Time(last)	0.022	0.001	0.020	0.025
Method(OT-A):S.Time(last)	−0.123	0.001	−0.126	−0.121
Method(DiP):S.Time(last)	−0.009	0.001	−0.012	−0.007
Method(CBN):S.Type(singleC)	−0.019	0.002	−0.022	−0.016
Method(CBN-A):S.Type(singleC)	−0.011	0.002	−0.014	−0.008
Method(OT):S.Type(singleC)	0.004	0.002	0.001	0.007
Method(OT-A):S.Type(singleC)	0.004	0.002	0.000	0.008
Method(DiP):S.Type(singleC)	0.009	0.002	0.006	0.012
Method(CBN):S.Type(wholeT_0.01)	0.043	0.001	0.040	0.046
Method(CBN-A):S.Type(wholeT_0.01)	0.023	0.002	0.020	0.026
Method(OT):S.Type(wholeT_0.01)	−0.013	0.002	−0.017	−0.010
Method(OT-A):S.Type(wholeT_0.01)	−0.015	0.002	−0.019	−0.012
Method(DiP):S.Type(wholeT_0.01)	−0.014	0.002	−0.017	−0.011
Method(CBN):Model(Bozic)	−0.077	0.002	−0.081	−0.073
Method(CBN-A):Model(Bozic)	−0.050	0.002	−0.054	−0.047

Supplementary Table 34: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(OT):Model(Bozic)	0.104	0.002	0.100	0.108
Method(OT-A):Model(Bozic)	0.122	0.002	0.117	0.126
Method(DiP):Model(Bozic)	−0.059	0.002	−0.063	−0.056
Method(CBN):Model(McF_4)	0.054	0.002	0.050	0.057
Method(CBN-A):Model(McF_4)	0.094	0.002	0.090	0.097
Method(OT):Model(McF_4)	−0.057	0.002	−0.061	−0.053
Method(OT-A):Model(McF_4)	−0.122	0.002	−0.127	−0.118
Method(DiP):Model(McF_4)	0.032	0.002	0.028	0.035
Method(CBN):Model(McF_6)	0.110	0.002	0.106	0.113
Method(CBN-A):Model(McF_6)	0.023	0.002	0.019	0.027
Method(OT):Model(McF_6)	−0.164	0.002	−0.169	−0.160
Method(OT-A):Model(McF_6)	−0.154	0.003	−0.159	−0.149
Method(DiP):Model(McF_6)	0.112	0.002	0.108	0.116
Method(CBN):Conjunction(No)	0.034	0.001	0.032	0.036
Method(CBN-A):Conjunction(No)	0.027	0.001	0.024	0.029
Method(OT):Conjunction(No)	−0.021	0.001	−0.024	−0.019
Method(OT-A):Conjunction(No)	−0.071	0.001	−0.074	−0.069
Method(DiP):Conjunction(No)	0.023	0.001	0.021	0.025
Method(CBN):sh(0)	−0.001	0.001	−0.004	0.001
Method(CBN-A):sh(0)	0.014	0.001	0.012	0.016
Method(OT):sh(0)	0.020	0.001	0.017	0.022
Method(OT-A):sh(0)	0.034	0.001	0.032	0.037
Method(DiP):sh(0)	−0.039	0.001	−0.041	−0.037
Method(CBN):NumNodes(7)	−0.039	0.002	−0.042	−0.036
Method(CBN-A):NumNodes(7)	−0.098	0.002	−0.102	−0.095
Method(OT):NumNodes(7)	0.210	0.002	0.207	0.213
Method(OT-A):NumNodes(7)	−0.150	0.002	−0.154	−0.146
Method(DiP):NumNodes(7)	0.084	0.002	0.081	0.087
Method(CBN):NumNodes(9)	0.023	0.002	0.020	0.026
Method(CBN-A):NumNodes(9)	0.075	0.002	0.072	0.078
Method(OT):NumNodes(9)	−0.087	0.002	−0.090	−0.083
Method(OT-A):NumNodes(9)	0.091	0.002	0.088	0.095
Method(DiP):NumNodes(9)	−0.079	0.002	−0.082	−0.076
S.Time(last):S.Type(singleC)	0.004	0.001	0.002	0.006
S.Time(last):S.Type(wholeT_0.01)	−0.010	0.001	−0.012	−0.008
S.Time(last):Model(Bozic)	−0.045	0.001	−0.047	−0.043
S.Time(last):Model(McF_4)	−0.036	0.001	−0.039	−0.034
S.Time(last):Model(McF_6)	0.129	0.001	0.126	0.131
S.Time(last):Conjunction(No)	0.003	0.001	0.001	0.004
S.Time(last):sh(0)	−0.007	0.001	−0.008	−0.005
S.Time(last):NumNodes(7)	0.035	0.001	0.033	0.037
S.Time(last):NumNodes(9)	0.008	0.001	0.006	0.010
S.Type(singleC):Model(Bozic)	−0.021	0.002	−0.024	−0.018
S.Type(wholeT_0.01):Model(Bozic)	0.039	0.002	0.035	0.042
S.Type(singleC):Model(McF_4)	0.012	0.002	0.009	0.016
S.Type(wholeT_0.01):Model(McF_4)	−0.022	0.002	−0.026	−0.019
S.Type(singleC):Model(McF_6)	0.010	0.002	0.006	0.013
S.Type(wholeT_0.01):Model(McF_6)	−0.023	0.002	−0.026	−0.019
S.Type(singleC):Conjunction(No)	−0.002	0.001	−0.004	0.000
S.Type(wholeT_0.01):Conjunction(No)	0.003	0.001	0.002	0.005
S.Type(singleC):sh(0)	0.019	0.001	0.017	0.021
S.Type(wholeT_0.01):sh(0)	−0.044	0.001	−0.046	−0.042
S.Type(singleC):NumNodes(7)	−0.021	0.001	−0.024	−0.018
S.Type(wholeT_0.01):NumNodes(7)	0.048	0.001	0.045	0.051
S.Type(singleC):NumNodes(9)	0.006	0.001	0.003	0.009
S.Type(wholeT_0.01):NumNodes(9)	−0.015	0.001	−0.018	−0.012
Model(Bozic):Conjunction(No)	0.014	0.001	0.012	0.017
Model(McF_4):Conjunction(No)	−0.015	0.001	−0.017	−0.012
Model(McF_6):Conjunction(No)	−0.013	0.001	−0.015	−0.010
Model(Bozic):sh(0)	−0.015	0.001	−0.017	−0.013
Model(McF_4):sh(0)	0.017	0.001	0.015	0.019
Model(McF_6):sh(0)	0.011	0.001	0.009	0.014

Supplementary Table 34: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Model(Bozic):NumNodes(7)	−0.018	0.002	−0.022	−0.015
Model(McF_4):NumNodes(7)	0.053	0.002	0.049	0.056
Model(McF_6):NumNodes(7)	0.027	0.002	0.023	0.030
Model(Bozic):NumNodes(9)	0.000	0.002	−0.003	0.004
Model(McF_4):NumNodes(9)	−0.033	0.002	−0.037	−0.030
Model(McF_6):NumNodes(9)	0.010	0.002	0.007	0.014
Conjunction(No):sh(0)	−0.004	0.001	−0.006	−0.003
Conjunction(No):NumNodes(7)	−0.056	0.001	−0.058	−0.054
Conjunction(No):NumNodes(9)	−0.009	0.001	−0.011	−0.007
sh(0):NumNodes(7)	−0.012	0.001	−0.014	−0.010
sh(0):NumNodes(9)	0.002	0.001	0.000	0.004

12.2.2 Fit for PFD, Drivers Unknown

Supplementary Table 35: Model fit for metric 'PFD' when there are passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	−0.572	0.006	−0.585	−0.560
S.Size(100)	0.928	0.008	0.913	0.943
S.Size(1000)	−1.080	0.008	−1.095	−1.065
Filter(J5)	−0.565	0.009	−0.584	−0.547
Filter(J1)	−0.052	0.006	−0.065	−0.040
Filter(S5)	−0.437	0.006	−0.449	−0.425
Method(CBN)	0.879	0.006	0.867	0.891
Method(CBN-A)	0.705	0.006	0.693	0.716
Method(OT)	−0.999	0.008	−1.015	−0.983
Method(OT-A)	−0.762	0.007	−0.775	−0.748
Method(DiP)	0.180	0.018	0.145	0.214
S.Time(last)	0.129	0.005	0.118	0.139
S.Type(singleC)	−0.217	0.008	−0.232	−0.202
S.Type(wholeT_0.01)	0.459	0.007	0.446	0.473
Model(Bozic)	0.789	0.009	0.771	0.807
Model(McF_4)	−0.684	0.009	−0.703	−0.666
Model(McF_6)	−0.613	0.008	−0.630	−0.597
Conjunction(No)	−0.099	0.005	−0.109	−0.090
sh(0)	−0.454	0.005	−0.465	−0.443
NumNodes(7)	−0.403	0.008	−0.418	−0.388
NumNodes(9)	0.365	0.007	0.351	0.380
S.Size(100):Filter(J5)	−0.187	0.007	−0.200	−0.173
S.Size(1000):Filter(J5)	0.198	0.007	0.184	0.211
S.Size(100):Filter(J1)	0.376	0.005	0.366	0.386
S.Size(1000):Filter(J1)	−0.250	0.006	−0.261	−0.239
S.Size(100):Filter(S5)	−0.125	0.005	−0.135	−0.116
S.Size(1000):Filter(S5)	0.117	0.005	0.107	0.127
S.Size(100):Method(CBN)	−0.521	0.006	−0.533	−0.509
S.Size(1000):Method(CBN)	0.671	0.006	0.659	0.683
S.Size(100):Method(CBN-A)	−0.496	0.006	−0.508	−0.484
S.Size(1000):Method(CBN-A)	0.639	0.006	0.627	0.651
S.Size(100):Method(OT)	−0.271	0.007	−0.285	−0.257
S.Size(1000):Method(OT)	0.333	0.008	0.319	0.348
S.Size(100):Method(OT-A)	−0.382	0.006	−0.395	−0.369
S.Size(1000):Method(OT-A)	0.473	0.007	0.460	0.486
S.Size(100):Method(DiP)	1.086	0.021	1.046	1.127
S.Size(1000):Method(DiP)	−1.574	0.020	−1.613	−1.535
S.Size(100):S.Time(last)	−0.145	0.006	−0.157	−0.134
S.Size(1000):S.Time(last)	0.184	0.006	0.172	0.195
S.Size(100):S.Type(singleC)	0.070	0.008	0.054	0.086
S.Size(1000):S.Type(singleC)	−0.146	0.009	−0.163	−0.129
S.Size(100):S.Type(wholeT_0.01)	−0.187	0.008	−0.202	−0.171
S.Size(1000):S.Type(wholeT_0.01)	0.305	0.008	0.288	0.321
S.Size(100):Model(Bozic)	0.043	0.010	0.024	0.063
S.Size(1000):Model(Bozic)	0.009	0.011	−0.012	0.030
S.Size(100):Model(McF_4)	0.021	0.010	0.002	0.040
S.Size(1000):Model(McF_4)	−0.084	0.010	−0.104	−0.064
S.Size(100):Model(McF_6)	0.003	0.010	−0.016	0.022
S.Size(1000):Model(McF_6)	−0.095	0.010	−0.115	−0.076
S.Size(100):Conjunction(No)	−0.014	0.006	−0.025	−0.002
S.Size(1000):Conjunction(No)	0.017	0.006	0.005	0.029
S.Size(100):sh(0)	0.002	0.006	−0.009	0.014
S.Size(1000):sh(0)	0.041	0.006	0.029	0.053
S.Size(100):NumNodes(7)	0.161	0.008	0.145	0.177
S.Size(1000):NumNodes(7)	−0.187	0.009	−0.204	−0.170
S.Size(100):NumNodes(9)	−0.092	0.008	−0.108	−0.076
S.Size(1000):NumNodes(9)	0.098	0.008	0.081	0.115
Filter(J5):Method(CBN)	0.157	0.011	0.136	0.178
Filter(J1):Method(CBN)	−0.170	0.008	−0.186	−0.155

Supplementary Table 35: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Filter(S5):Method(CBN)	0.052	0.007	0.038	0.066
Filter(J5):Method(CBN-A)	0.068	0.010	0.048	0.089
Filter(J1):Method(CBN-A)	−0.135	0.008	−0.150	−0.120
Filter(S5):Method(CBN-A)	0.052	0.007	0.037	0.066
Filter(J5):Method(OT)	−0.510	0.017	−0.543	−0.478
Filter(J1):Method(OT)	0.249	0.010	0.229	0.269
Filter(S5):Method(OT)	−0.236	0.011	−0.257	−0.215
Filter(J5):Method(OT-A)	−0.095	0.012	−0.119	−0.071
Filter(J1):Method(OT-A)	0.087	0.008	0.071	0.104
Filter(S5):Method(OT-A)	−0.136	0.008	−0.153	−0.120
Filter(J5):Method(DiP)	−0.004	0.031	−0.065	0.057
Filter(J1):Method(DiP)	−0.079	0.021	−0.121	−0.037
Filter(S5):Method(DiP)	0.101	0.020	0.062	0.139
Filter(J5):S.Time(last)	−0.166	0.006	−0.177	−0.155
Filter(J1):S.Time(last)	0.103	0.004	0.095	0.111
Filter(S5):S.Time(last)	0.184	0.004	0.177	0.192
Filter(J5):S.Type(singleC)	0.033	0.008	0.018	0.047
Filter(J1):S.Type(singleC)	−0.061	0.006	−0.072	−0.050
Filter(S5):S.Type(singleC)	−0.023	0.005	−0.034	−0.012
Filter(J5):S.Type(wholeT_0.01)	−0.100	0.007	−0.113	−0.087
Filter(J1):S.Type(wholeT_0.01)	0.131	0.005	0.122	0.141
Filter(S5):S.Type(wholeT_0.01)	0.021	0.005	0.011	0.030
Filter(J5):Model(Bozic)	−0.271	0.010	−0.290	−0.251
Filter(J1):Model(Bozic)	0.130	0.007	0.117	0.144
Filter(S5):Model(Bozic)	0.255	0.007	0.241	0.268
Filter(J5):Model(McF_4)	0.114	0.010	0.094	0.134
Filter(J1):Model(McF_4)	−0.066	0.007	−0.080	−0.051
Filter(S5):Model(McF_4)	−0.247	0.007	−0.260	−0.233
Filter(J5):Model(McF_6)	0.165	0.008	0.150	0.181
Filter(J1):Model(McF_6)	−0.077	0.006	−0.089	−0.066
Filter(S5):Model(McF_6)	−0.143	0.006	−0.155	−0.132
Filter(J5):Conjunction(No)	−0.009	0.005	−0.019	0.000
Filter(J1):Conjunction(No)	−0.026	0.004	−0.033	−0.019
Filter(S5):Conjunction(No)	0.051	0.003	0.044	0.058
Filter(J5):sh(0)	0.062	0.005	0.052	0.072
Filter(J1):sh(0)	−0.046	0.004	−0.054	−0.039
Filter(S5):sh(0)	0.037	0.004	0.029	0.044
Filter(J5):NumNodes(7)	−0.376	0.007	−0.390	−0.363
Filter(J1):NumNodes(7)	−0.052	0.005	−0.062	−0.042
Filter(S5):NumNodes(7)	−0.166	0.005	−0.177	−0.156
Filter(J5):NumNodes(9)	0.320	0.007	0.307	0.334
Filter(J1):NumNodes(9)	−0.038	0.005	−0.048	−0.027
Filter(S5):NumNodes(9)	−0.058	0.005	−0.068	−0.047
Method(CBN):S.Time(last)	0.264	0.004	0.256	0.272
Method(CBN-A):S.Time(last)	0.275	0.004	0.267	0.282
Method(OT):S.Time(last)	0.053	0.005	0.044	0.062
Method(OT-A):S.Time(last)	−0.003	0.004	−0.012	0.005
Method(DiP):S.Time(last)	−0.502	0.011	−0.524	−0.481
Method(CBN):S.Type(singleC)	0.047	0.006	0.036	0.059
Method(CBN-A):S.Type(singleC)	0.065	0.006	0.053	0.076
Method(OT):S.Type(singleC)	−0.131	0.007	−0.145	−0.117
Method(OT-A):S.Type(singleC)	−0.078	0.006	−0.090	−0.065
Method(DiP):S.Type(singleC)	0.091	0.018	0.057	0.126
Method(CBN):S.Type(wholeT_0.01)	−0.095	0.005	−0.105	−0.085
Method(CBN-A):S.Type(wholeT_0.01)	−0.159	0.005	−0.169	−0.148
Method(OT):S.Type(wholeT_0.01)	0.249	0.006	0.237	0.262
Method(OT-A):S.Type(wholeT_0.01)	0.147	0.006	0.136	0.158
Method(DiP):S.Type(wholeT_0.01)	−0.109	0.015	−0.138	−0.080
Method(CBN):Model(Bozic)	−0.439	0.007	−0.453	−0.425
Method(CBN-A):Model(Bozic)	−0.415	0.007	−0.429	−0.401
Method(OT):Model(Bozic)	0.002	0.008	−0.014	0.018
Method(OT-A):Model(Bozic)	−0.174	0.008	−0.189	−0.159

Supplementary Table 35: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(DiP):Model(Bozic)	0.778	0.018	0.743	0.814
Method(CBN):Model(McF_4)	0.661	0.008	0.646	0.675
Method(CBN-A):Model(McF_4)	0.694	0.008	0.679	0.708
Method(OT):Model(McF_4)	0.155	0.009	0.138	0.173
Method(OT-A):Model(McF_4)	0.119	0.008	0.103	0.135
Method(DiP):Model(McF_4)	−0.664	0.022	−0.708	−0.620
Method(CBN):Model(McF_6)	0.165	0.006	0.152	0.177
Method(CBN-A):Model(McF_6)	0.095	0.006	0.083	0.108
Method(OT):Model(McF_6)	−0.017	0.008	−0.032	−0.002
Method(OT-A):Model(McF_6)	0.362	0.007	0.349	0.376
Method(DiP):Model(McF_6)	−0.965	0.020	−1.004	−0.927
Method(CBN):Conjunction(No)	0.085	0.004	0.077	0.092
Method(CBN-A):Conjunction(No)	0.073	0.004	0.066	0.080
Method(OT):Conjunction(No)	−0.037	0.004	−0.046	−0.028
Method(OT-A):Conjunction(No)	−0.005	0.004	−0.013	0.002
Method(DiP):Conjunction(No)	−0.061	0.010	−0.082	−0.041
Method(CBN):sh(0)	0.256	0.004	0.248	0.264
Method(CBN-A):sh(0)	0.295	0.004	0.287	0.303
Method(OT):sh(0)	0.117	0.005	0.107	0.127
Method(OT-A):sh(0)	0.159	0.005	0.150	0.168
Method(DiP):sh(0)	−0.697	0.013	−0.723	−0.672
Method(CBN):NumNodes(7)	−0.275	0.006	−0.286	−0.263
Method(CBN-A):NumNodes(7)	−0.383	0.006	−0.395	−0.372
Method(OT):NumNodes(7)	0.325	0.007	0.311	0.340
Method(OT-A):NumNodes(7)	−0.250	0.006	−0.262	−0.238
Method(DiP):NumNodes(7)	0.859	0.018	0.823	0.895
Method(CBN):NumNodes(9)	0.189	0.006	0.178	0.200
Method(CBN-A):NumNodes(9)	0.279	0.006	0.268	0.290
Method(OT):NumNodes(9)	−0.062	0.007	−0.075	−0.049
Method(OT-A):NumNodes(9)	0.183	0.006	0.171	0.195
Method(DiP):NumNodes(9)	−0.674	0.016	−0.705	−0.642
S.Time(last):S.Type(singleC)	0.087	0.006	0.075	0.099
S.Time(last):S.Type(wholeT_0.01)	−0.179	0.006	−0.191	−0.168
S.Time(last):Model(Bozic)	−0.150	0.007	−0.164	−0.135
S.Time(last):Model(McF_4)	−0.096	0.007	−0.110	−0.082
S.Time(last):Model(McF_6)	0.405	0.007	0.391	0.419
S.Time(last):Conjunction(No)	−0.027	0.004	−0.035	−0.019
S.Time(last):sh(0)	−0.062	0.004	−0.071	−0.054
S.Time(last):NumNodes(7)	0.174	0.006	0.162	0.185
S.Time(last):NumNodes(9)	−0.050	0.006	−0.062	−0.039
S.Type(singleC):Model(Bozic)	−0.031	0.011	−0.052	−0.010
S.Type(wholeT_0.01):Model(Bozic)	0.050	0.010	0.031	0.070
S.Type(singleC):Model(McF_4)	0.021	0.010	0.001	0.041
S.Type(wholeT_0.01):Model(McF_4)	−0.020	0.010	−0.039	−0.001
S.Type(singleC):Model(McF_6)	0.039	0.010	0.020	0.058
S.Type(wholeT_0.01):Model(McF_6)	−0.073	0.010	−0.091	−0.054
S.Type(singleC):Conjunction(No)	0.003	0.006	−0.009	0.014
S.Type(wholeT_0.01):Conjunction(No)	−0.001	0.006	−0.013	0.010
S.Type(singleC):sh(0)	0.062	0.006	0.050	0.074
S.Type(wholeT_0.01):sh(0)	−0.159	0.006	−0.170	−0.147
S.Type(singleC):NumNodes(7)	−0.141	0.009	−0.158	−0.124
S.Type(wholeT_0.01):NumNodes(7)	0.338	0.008	0.321	0.354
S.Type(singleC):NumNodes(9)	0.068	0.008	0.051	0.085
S.Type(wholeT_0.01):NumNodes(9)	−0.150	0.008	−0.165	−0.134
Model(Bozic):Conjunction(No)	−0.013	0.007	−0.028	0.001
Model(McF_4):Conjunction(No)	−0.051	0.007	−0.065	−0.037
Model(McF_6):Conjunction(No)	0.071	0.007	0.058	0.085
Model(Bozic):sh(0)	−0.154	0.007	−0.169	−0.139
Model(McF_4):sh(0)	0.151	0.007	0.137	0.165
Model(McF_6):sh(0)	0.226	0.007	0.212	0.239
Model(Bozic):NumNodes(7)	−0.085	0.010	−0.105	−0.065
Model(McF_4):NumNodes(7)	0.277	0.010	0.257	0.296

Supplementary Table 35: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Model(McF_6):NumNodes(7)	0.427	0.010	0.408	0.446
Model(Bozic):NumNodes(9)	0.039	0.010	0.019	0.059
Model(McF_4):NumNodes(9)	−0.186	0.010	−0.205	−0.166
Model(McF_6):NumNodes(9)	−0.252	0.010	−0.272	−0.233
Conjunction(No):sh(0)	0.025	0.004	0.017	0.033
Conjunction(No):NumNodes(7)	−0.042	0.006	−0.054	−0.031
Conjunction(No):NumNodes(9)	0.002	0.006	−0.010	0.013
sh(0):NumNodes(7)	−0.150	0.006	−0.162	−0.138
sh(0):NumNodes(9)	0.091	0.006	0.079	0.102

12.2.3 Fit for PND, Drivers Unknown

Supplementary Table 36: Model fit for metric 'PND' when there are passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	2.465	0.004	2.457	2.473
S.Size(100)	0.464	0.005	0.454	0.474
S.Size(1000)	−0.558	0.005	−0.567	−0.549
Filter(J5)	1.150	0.004	1.142	1.159
Filter(J1)	0.182	0.003	0.175	0.188
Filter(S5)	−0.230	0.003	−0.236	−0.224
Method(CBN)	−0.515	0.004	−0.523	−0.508
Method(CBN-A)	−0.659	0.004	−0.667	−0.651
Method(OT)	−0.678	0.004	−0.686	−0.670
Method(OT-A)	−1.110	0.004	−1.118	−1.103
Method(DiP)	1.801	0.009	1.784	1.818
S.Time(last)	−0.383	0.003	−0.389	−0.376
S.Type(singleC)	0.247	0.005	0.238	0.256
S.Type(wholeT_0.01)	−0.610	0.005	−0.619	−0.601
Model(Bozic)	0.674	0.006	0.662	0.686
Model(McF_4)	−0.528	0.006	−0.539	−0.517
Model(McF_6)	−1.857	0.006	−1.868	−1.846
Conjunction(No)	−0.292	0.003	−0.299	−0.286
sh(0)	0.264	0.003	0.258	0.271
NumNodes(7)	−0.384	0.005	−0.393	−0.375
NumNodes(9)	0.319	0.005	0.310	0.329
S.Size(100):Filter(J5)	−0.024	0.004	−0.032	−0.015
S.Size(1000):Filter(J5)	0.065	0.004	0.057	0.073
S.Size(100):Filter(J1)	−0.012	0.004	−0.019	−0.004
S.Size(1000):Filter(J1)	0.029	0.004	0.022	0.036
S.Size(100):Filter(S5)	−0.019	0.003	−0.026	−0.012
S.Size(1000):Filter(S5)	0.010	0.003	0.003	0.016
S.Size(100):Method(CBN)	−0.608	0.005	−0.617	−0.599
S.Size(1000):Method(CBN)	0.716	0.004	0.707	0.724
S.Size(100):Method(CBN-A)	−0.570	0.005	−0.579	−0.561
S.Size(1000):Method(CBN-A)	0.669	0.004	0.661	0.677
S.Size(100):Method(OT)	−0.529	0.005	−0.538	−0.520
S.Size(1000):Method(OT)	0.630	0.004	0.622	0.638
S.Size(100):Method(OT-A)	−0.554	0.005	−0.563	−0.545
S.Size(1000):Method(OT-A)	0.655	0.004	0.646	0.663
S.Size(100):Method(DiP)	0.988	0.010	0.969	1.008
S.Size(1000):Method(DiP)	−1.346	0.007	−1.360	−1.332
S.Size(100):S.Time(last)	0.060	0.004	0.051	0.069
S.Size(1000):S.Time(last)	−0.065	0.004	−0.074	−0.057
S.Size(100):S.Type(singleC)	−0.025	0.006	−0.037	−0.013
S.Size(1000):S.Type(singleC)	0.016	0.006	0.003	0.028
S.Size(100):S.Type(wholeT_0.01)	0.040	0.006	0.028	0.052
S.Size(1000):S.Type(wholeT_0.01)	−0.020	0.006	−0.032	−0.008
S.Size(100):Model(Bozic)	−0.057	0.008	−0.073	−0.042
S.Size(1000):Model(Bozic)	0.058	0.008	0.042	0.073
S.Size(100):Model(McF_4)	0.043	0.007	0.028	0.058
S.Size(1000):Model(McF_4)	−0.046	0.007	−0.061	−0.032
S.Size(100):Model(McF_6)	0.130	0.007	0.116	0.145
S.Size(1000):Model(McF_6)	−0.109	0.007	−0.124	−0.095
S.Size(100):Conjunction(No)	0.003	0.004	−0.006	0.012
S.Size(1000):Conjunction(No)	−0.019	0.004	−0.027	−0.010
S.Size(100):sh(0)	−0.079	0.004	−0.088	−0.070
S.Size(1000):sh(0)	0.125	0.004	0.116	0.134
S.Size(100):NumNodes(7)	0.052	0.006	0.039	0.064
S.Size(1000):NumNodes(7)	−0.060	0.006	−0.073	−0.048
S.Size(100):NumNodes(9)	−0.036	0.006	−0.048	−0.023
S.Size(1000):NumNodes(9)	0.041	0.006	0.028	0.053
Filter(J5):Method(CBN)	0.002	0.006	−0.011	0.014
Filter(J1):Method(CBN)	0.005	0.005	−0.006	0.015

Supplementary Table 36: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Filter(S5):Method(CBN)	0.047	0.005	0.037	0.057
Filter(J5):Method(CBN-A)	−0.137	0.006	−0.149	−0.125
Filter(J1):Method(CBN-A)	0.030	0.005	0.019	0.040
Filter(S5):Method(CBN-A)	0.112	0.005	0.102	0.122
Filter(J5):Method(OT)	0.048	0.006	0.036	0.060
Filter(J1):Method(OT)	0.045	0.005	0.035	0.055
Filter(S5):Method(OT)	0.014	0.005	0.005	0.024
Filter(J5):Method(OT-A)	0.189	0.006	0.177	0.200
Filter(J1):Method(OT-A)	0.095	0.005	0.085	0.105
Filter(S5):Method(OT-A)	−0.036	0.005	−0.046	−0.026
Filter(J5):Method(DiP)	−0.062	0.010	−0.081	−0.043
Filter(J1):Method(DiP)	−0.097	0.008	−0.113	−0.081
Filter(S5):Method(DiP)	−0.082	0.007	−0.096	−0.067
Filter(J5):S.Time(last)	−0.299	0.003	−0.305	−0.293
Filter(J1):S.Time(last)	0.112	0.003	0.107	0.117
Filter(S5):S.Time(last)	−0.094	0.002	−0.098	−0.089
Filter(J5):S.Type(singleC)	0.049	0.004	0.041	0.057
Filter(J1):S.Type(singleC)	0.024	0.004	0.017	0.031
Filter(S5):S.Type(singleC)	0.029	0.003	0.023	0.036
Filter(J5):S.Type(wholeT_0.01)	−0.103	0.004	−0.111	−0.095
Filter(J1):S.Type(wholeT_0.01)	−0.042	0.003	−0.049	−0.036
Filter(S5):S.Type(wholeT_0.01)	−0.082	0.003	−0.089	−0.076
Filter(J5):Model(Bozic)	−0.115	0.006	−0.127	−0.102
Filter(J1):Model(Bozic)	−0.112	0.005	−0.122	−0.102
Filter(S5):Model(Bozic)	0.169	0.005	0.159	0.179
Filter(J5):Model(McF_4)	0.001	0.005	−0.009	0.012
Filter(J1):Model(McF_4)	0.244	0.004	0.235	0.252
Filter(S5):Model(McF_4)	−0.171	0.004	−0.179	−0.163
Filter(J5):Model(McF_6)	−0.217	0.005	−0.226	−0.207
Filter(J1):Model(McF_6)	0.121	0.004	0.114	0.129
Filter(S5):Model(McF_6)	−0.123	0.004	−0.131	−0.115
Filter(J5):Conjunction(No)	0.146	0.003	0.140	0.151
Filter(J1):Conjunction(No)	0.060	0.002	0.055	0.065
Filter(S5):Conjunction(No)	−0.062	0.002	−0.066	−0.057
Filter(J5):sh(0)	0.115	0.003	0.109	0.121
Filter(J1):sh(0)	0.025	0.003	0.020	0.030
Filter(S5):sh(0)	0.020	0.002	0.015	0.024
Filter(J5):NumNodes(7)	−0.462	0.004	−0.471	−0.454
Filter(J1):NumNodes(7)	−0.177	0.004	−0.184	−0.170
Filter(S5):NumNodes(7)	0.165	0.004	0.159	0.172
Filter(J5):NumNodes(9)	0.230	0.004	0.221	0.239
Filter(J1):NumNodes(9)	0.050	0.004	0.042	0.057
Filter(S5):NumNodes(9)	−0.088	0.003	−0.095	−0.081
Method(CBN):S.Time(last)	0.101	0.003	0.095	0.107
Method(CBN-A):S.Time(last)	0.155	0.003	0.149	0.161
Method(OT):S.Time(last)	0.197	0.003	0.191	0.202
Method(OT-A):S.Time(last)	−0.295	0.003	−0.301	−0.289
Method(DiP):S.Time(last)	0.124	0.004	0.115	0.133
Method(CBN):S.Type(singleC)	−0.057	0.004	−0.065	−0.049
Method(CBN-A):S.Type(singleC)	−0.055	0.004	−0.064	−0.047
Method(OT):S.Type(singleC)	−0.043	0.004	−0.052	−0.035
Method(OT-A):S.Type(singleC)	−0.014	0.004	−0.023	−0.006
Method(DiP):S.Type(singleC)	0.067	0.006	0.054	0.080
Method(CBN):S.Type(wholeT_0.01)	0.139	0.004	0.131	0.147
Method(CBN-A):S.Type(wholeT_0.01)	0.116	0.004	0.108	0.124
Method(OT):S.Type(wholeT_0.01)	0.091	0.004	0.083	0.099
Method(OT-A):S.Type(wholeT_0.01)	0.033	0.004	0.025	0.041
Method(DiP):S.Type(wholeT_0.01)	−0.147	0.006	−0.159	−0.136
Method(CBN):Model(Bozic)	−0.215	0.006	−0.226	−0.203
Method(CBN-A):Model(Bozic)	−0.140	0.006	−0.151	−0.128
Method(OT):Model(Bozic)	0.035	0.006	0.023	0.046
Method(OT-A):Model(Bozic)	0.152	0.006	0.141	0.164

Supplementary Table 36: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(DiP):Model(Bozic)	0.058	0.010	0.038	0.079
Method(CBN):Model(McF_4)	0.179	0.005	0.169	0.189
Method(CBN-A):Model(McF_4)	0.244	0.005	0.234	0.254
Method(OT):Model(McF_4)	−0.030	0.005	−0.040	−0.020
Method(OT-A):Model(McF_4)	0.008	0.005	−0.001	0.018
Method(DiP):Model(McF_4)	−0.182	0.008	−0.198	−0.167
Method(CBN):Model(McF_6)	0.390	0.005	0.381	0.400
Method(CBN-A):Model(McF_6)	0.267	0.005	0.257	0.276
Method(OT):Model(McF_6)	0.112	0.005	0.102	0.121
Method(OT-A):Model(McF_6)	−0.200	0.005	−0.210	−0.190
Method(DiP):Model(McF_6)	−0.031	0.008	−0.046	−0.016
Method(CBN):Conjunction(No)	0.096	0.003	0.090	0.102
Method(CBN-A):Conjunction(No)	0.092	0.003	0.086	0.097
Method(OT):Conjunction(No)	−0.043	0.003	−0.049	−0.037
Method(OT-A):Conjunction(No)	−0.141	0.003	−0.146	−0.135
Method(DiP):Conjunction(No)	−0.002	0.004	−0.010	0.007
Method(CBN):sh(0)	0.101	0.003	0.095	0.107
Method(CBN-A):sh(0)	0.129	0.003	0.123	0.134
Method(OT):sh(0)	0.121	0.003	0.115	0.127
Method(OT-A):sh(0)	0.139	0.003	0.134	0.145
Method(DiP):sh(0)	−0.346	0.004	−0.355	−0.337
Method(CBN):NumNodes(7)	0.012	0.004	0.003	0.021
Method(CBN-A):NumNodes(7)	−0.293	0.004	−0.302	−0.285
Method(OT):NumNodes(7)	0.302	0.004	0.293	0.311
Method(OT-A):NumNodes(7)	−0.620	0.004	−0.628	−0.611
Method(DiP):NumNodes(7)	0.864	0.008	0.849	0.879
Method(CBN):NumNodes(9)	−0.042	0.004	−0.051	−0.034
Method(CBN-A):NumNodes(9)	0.120	0.004	0.111	0.129
Method(OT):NumNodes(9)	−0.054	0.004	−0.062	−0.045
Method(OT-A):NumNodes(9)	0.275	0.004	0.266	0.283
Method(DiP):NumNodes(9)	−0.382	0.007	−0.395	−0.369
S.Time(last):S.Type(singleC)	−0.029	0.004	−0.038	−0.021
S.Time(last):S.Type(wholeT_0.01)	0.082	0.004	0.074	0.091
S.Time(last):Model(Bozic)	−0.071	0.006	−0.082	−0.061
S.Time(last):Model(McF_4)	0.052	0.005	0.041	0.062
S.Time(last):Model(McF_6)	0.324	0.005	0.314	0.334
S.Time(last):Conjunction(No)	−0.019	0.003	−0.025	−0.013
S.Time(last):sh(0)	−0.031	0.003	−0.037	−0.025
S.Time(last):NumNodes(7)	0.366	0.004	0.358	0.375
S.Time(last):NumNodes(9)	−0.134	0.005	−0.143	−0.126
S.Type(singleC):Model(Bozic)	0.113	0.008	0.098	0.129
S.Type(wholeT_0.01):Model(Bozic)	−0.336	0.008	−0.351	−0.321
S.Type(singleC):Model(McF_4)	−0.096	0.007	−0.111	−0.081
S.Type(wholeT_0.01):Model(McF_4)	0.272	0.007	0.258	0.286
S.Type(singleC):Model(McF_6)	−0.194	0.007	−0.208	−0.179
S.Type(wholeT_0.01):Model(McF_6)	0.469	0.007	0.454	0.483
S.Type(singleC):Conjunction(No)	0.015	0.004	0.006	0.023
S.Type(wholeT_0.01):Conjunction(No)	−0.032	0.004	−0.040	−0.023
S.Type(singleC):sh(0)	0.055	0.004	0.047	0.064
S.Type(wholeT_0.01):sh(0)	−0.179	0.004	−0.188	−0.171
S.Type(singleC):NumNodes(7)	−0.054	0.006	−0.066	−0.042
S.Type(wholeT_0.01):NumNodes(7)	0.098	0.006	0.086	0.110
S.Type(singleC):NumNodes(9)	0.045	0.006	0.033	0.058
S.Type(wholeT_0.01):NumNodes(9)	−0.088	0.006	−0.100	−0.076
Model(Bozic):Conjunction(No)	0.048	0.006	0.037	0.059
Model(McF_4):Conjunction(No)	−0.084	0.005	−0.094	−0.074
Model(McF_6):Conjunction(No)	−0.067	0.005	−0.077	−0.057
Model(Bozic):sh(0)	0.214	0.006	0.203	0.225
Model(McF_4):sh(0)	−0.415	0.005	−0.425	−0.405
Model(McF_6):sh(0)	−0.422	0.005	−0.432	−0.411
Model(Bozic):NumNodes(7)	−0.245	0.008	−0.261	−0.230
Model(McF_4):NumNodes(7)	0.249	0.007	0.234	0.264

Supplementary Table 36: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Model(McF_6):NumNodes(7)	0.306	0.007	0.291	0.320
Model(Bozic):NumNodes(9)	0.117	0.008	0.101	0.133
Model(McF_4):NumNodes(9)	−0.195	0.008	−0.210	−0.180
Model(McF_6):NumNodes(9)	−0.145	0.007	−0.159	−0.130
Conjunction(No):sh(0)	0.019	0.003	0.013	0.025
Conjunction(No):NumNodes(7)	−0.073	0.004	−0.082	−0.064
Conjunction(No):NumNodes(9)	−0.128	0.004	−0.137	−0.119
sh(0):NumNodes(7)	−0.082	0.004	−0.091	−0.073
sh(0):NumNodes(9)	0.060	0.005	0.052	0.069

12.2.4 Fit for FPF, Drivers Unknown

Supplementary Table 37: Model fit for metric 'FPF' when there are passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	−8.314	0.005	−8.323	−8.304
S.Size(100)	0.432	0.006	0.421	0.443
S.Size(1000)	−0.502	0.006	−0.513	−0.490
Filter(J5)	−1.278	0.006	−1.290	−1.266
Filter(J1)	−0.181	0.004	−0.189	−0.174
Filter(S5)	−0.262	0.004	−0.270	−0.254
Method(CBN)	1.381	0.004	1.374	1.388
Method(CBN-A)	1.309	0.004	1.302	1.317
Method(OT)	−0.236	0.006	−0.248	−0.224
Method(OT-A)	0.185	0.005	0.176	0.195
Method(DiP)	−1.751	0.010	−1.772	−1.731
S.Time(last)	0.427	0.004	0.419	0.435
S.Type(singleC)	−0.494	0.006	−0.506	−0.482
S.Type(wholeT_0.01)	1.096	0.006	1.085	1.107
Model(Bozic)	0.315	0.007	0.302	0.329
Model(McF_4)	−0.339	0.008	−0.354	−0.324
Model(McF_6)	0.753	0.007	0.739	0.766
Conjunction(No)	−0.006	0.004	−0.014	0.002
sh(0)	−0.631	0.004	−0.639	−0.622
NumNodes(7)	0.112	0.006	0.101	0.124
NumNodes(9)	0.038	0.006	0.027	0.049
S.Size(100):Filter(J5)	−0.177	0.005	−0.186	−0.168
S.Size(1000):Filter(J5)	0.191	0.005	0.182	0.201
S.Size(100):Filter(J1)	0.399	0.003	0.393	0.405
S.Size(1000):Filter(J1)	−0.320	0.004	−0.328	−0.313
S.Size(100):Filter(S5)	−0.106	0.003	−0.112	−0.100
S.Size(1000):Filter(S5)	0.092	0.003	0.085	0.098
S.Size(100):Method(CBN)	0.126	0.003	0.121	0.131
S.Size(1000):Method(CBN)	−0.081	0.003	−0.087	−0.076
S.Size(100):Method(CBN-A)	0.145	0.003	0.140	0.150
S.Size(1000):Method(CBN-A)	−0.104	0.003	−0.109	−0.098
S.Size(100):Method(OT)	0.187	0.004	0.180	0.194
S.Size(1000):Method(OT)	−0.211	0.004	−0.219	−0.202
S.Size(100):Method(OT-A)	0.163	0.003	0.156	0.169
S.Size(1000):Method(OT-A)	−0.162	0.004	−0.170	−0.155
S.Size(100):Method(DiP)	−0.263	0.007	−0.276	−0.250
S.Size(1000):Method(DiP)	0.269	0.007	0.256	0.282
S.Size(100):S.Time(last)	−0.190	0.005	−0.200	−0.180
S.Size(1000):S.Time(last)	0.219	0.005	0.209	0.229
S.Size(100):S.Type(singleC)	0.103	0.007	0.089	0.117
S.Size(1000):S.Type(singleC)	−0.175	0.008	−0.189	−0.160
S.Size(100):S.Type(wholeT_0.01)	−0.240	0.007	−0.254	−0.227
S.Size(1000):S.Type(wholeT_0.01)	0.333	0.007	0.319	0.347
S.Size(100):Model(Bozic)	0.092	0.009	0.075	0.108
S.Size(1000):Model(Bozic)	−0.020	0.009	−0.038	−0.002
S.Size(100):Model(McF_4)	−0.004	0.009	−0.020	0.013
S.Size(1000):Model(McF_4)	−0.070	0.009	−0.087	−0.053
S.Size(100):Model(McF_6)	−0.075	0.008	−0.091	−0.058
S.Size(1000):Model(McF_6)	−0.078	0.009	−0.096	−0.061
S.Size(100):Conjunction(No)	−0.012	0.005	−0.021	−0.002
S.Size(1000):Conjunction(No)	0.018	0.005	0.008	0.029
S.Size(100):sh(0)	0.062	0.005	0.052	0.071
S.Size(1000):sh(0)	−0.023	0.005	−0.034	−0.013
S.Size(100):NumNodes(7)	0.148	0.007	0.134	0.162
S.Size(1000):NumNodes(7)	−0.197	0.008	−0.212	−0.182
S.Size(100):NumNodes(9)	−0.062	0.007	−0.075	−0.048
S.Size(1000):NumNodes(9)	0.081	0.007	0.067	0.096
Filter(J5):Method(CBN)	−0.002	0.007	−0.015	0.012
Filter(J1):Method(CBN)	−0.179	0.004	−0.187	−0.170

Supplementary Table 37: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Filter(S5):Method(CBN)	0.036	0.004	0.027	0.044
Filter(J5):Method(CBN-A)	0.062	0.007	0.049	0.076
Filter(J1):Method(CBN-A)	−0.170	0.004	−0.179	−0.162
Filter(S5):Method(CBN-A)	−0.017	0.005	−0.026	−0.008
Filter(J5):Method(OT)	−0.559	0.014	−0.586	−0.532
Filter(J1):Method(OT)	0.229	0.007	0.216	0.243
Filter(S5):Method(OT)	−0.089	0.008	−0.104	−0.073
Filter(J5):Method(OT-A)	−0.151	0.009	−0.170	−0.133
Filter(J1):Method(OT-A)	0.076	0.006	0.065	0.087
Filter(S5):Method(OT-A)	−0.119	0.006	−0.131	−0.106
Filter(J5):Method(DiP)	0.219	0.017	0.186	0.251
Filter(J1):Method(DiP)	0.032	0.010	0.014	0.051
Filter(S5):Method(DiP)	0.092	0.011	0.071	0.113
Filter(J5):S.Time(last)	0.075	0.004	0.067	0.082
Filter(J1):S.Time(last)	−0.038	0.002	−0.043	−0.034
Filter(S5):S.Time(last)	0.284	0.003	0.279	0.289
Filter(J5):S.Type(singleC)	0.016	0.005	0.005	0.026
Filter(J1):S.Type(singleC)	−0.154	0.004	−0.161	−0.146
Filter(S5):S.Type(singleC)	−0.054	0.004	−0.062	−0.047
Filter(J5):S.Type(wholeT_0.01)	−0.048	0.005	−0.057	−0.039
Filter(J1):S.Type(wholeT_0.01)	0.321	0.003	0.315	0.327
Filter(S5):S.Type(wholeT_0.01)	0.091	0.003	0.085	0.098
Filter(J5):Model(Bozic)	−0.273	0.007	−0.285	−0.260
Filter(J1):Model(Bozic)	0.223	0.004	0.216	0.230
Filter(S5):Model(Bozic)	0.140	0.004	0.132	0.147
Filter(J5):Model(McF_4)	0.136	0.007	0.123	0.150
Filter(J1):Model(McF_4)	−0.342	0.005	−0.352	−0.333
Filter(S5):Model(McF_4)	−0.096	0.005	−0.105	−0.087
Filter(J5):Model(McF_6)	0.445	0.005	0.434	0.455
Filter(J1):Model(McF_6)	−0.044	0.004	−0.051	−0.037
Filter(S5):Model(McF_6)	−0.105	0.004	−0.113	−0.098
Filter(J5):Conjunction(No)	−0.029	0.003	−0.036	−0.023
Filter(J1):Conjunction(No)	−0.010	0.002	−0.014	−0.006
Filter(S5):Conjunction(No)	0.048	0.002	0.044	0.053
Filter(J5):sh(0)	0.027	0.004	0.020	0.034
Filter(J1):sh(0)	−0.115	0.003	−0.120	−0.110
Filter(S5):sh(0)	0.007	0.003	0.002	0.012
Filter(J5):NumNodes(7)	0.033	0.005	0.024	0.043
Filter(J1):NumNodes(7)	−0.001	0.003	−0.007	0.006
Filter(S5):NumNodes(7)	−0.246	0.004	−0.253	−0.239
Filter(J5):NumNodes(9)	0.066	0.005	0.057	0.075
Filter(J1):NumNodes(9)	−0.036	0.003	−0.042	−0.030
Filter(S5):NumNodes(9)	0.022	0.003	0.015	0.028
Method(CBN):S.Time(last)	0.220	0.002	0.216	0.224
Method(CBN-A):S.Time(last)	0.179	0.002	0.175	0.183
Method(OT):S.Time(last)	−0.023	0.003	−0.028	−0.018
Method(OT-A):S.Time(last)	0.153	0.003	0.148	0.158
Method(DiP):S.Time(last)	−0.483	0.005	−0.494	−0.473
Method(CBN):S.Type(singleC)	0.148	0.003	0.142	0.155
Method(CBN-A):S.Type(singleC)	0.154	0.003	0.147	0.161
Method(OT):S.Type(singleC)	0.002	0.005	−0.007	0.011
Method(OT-A):S.Type(singleC)	0.026	0.004	0.017	0.034
Method(DiP):S.Type(singleC)	−0.196	0.011	−0.218	−0.174
Method(CBN):S.Type(wholeT_0.01)	−0.291	0.003	−0.297	−0.286
Method(CBN-A):S.Type(wholeT_0.01)	−0.323	0.003	−0.328	−0.317
Method(OT):S.Type(wholeT_0.01)	−0.016	0.004	−0.023	−0.008
Method(OT-A):S.Type(wholeT_0.01)	−0.056	0.004	−0.063	−0.049
Method(DiP):S.Type(wholeT_0.01)	0.425	0.008	0.409	0.441
Method(CBN):Model(Bozic)	−0.263	0.003	−0.269	−0.256
Method(CBN-A):Model(Bozic)	−0.260	0.003	−0.266	−0.253
Method(OT):Model(Bozic)	−0.065	0.004	−0.073	−0.056
Method(OT-A):Model(Bozic)	−0.178	0.004	−0.186	−0.170

Supplementary Table 37: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(DiP):Model(Bozic)	0.534	0.008	0.519	0.550
Method(CBN):Model(McF_4)	0.540	0.005	0.531	0.550
Method(CBN-A):Model(McF_4)	0.527	0.005	0.518	0.536
Method(OT):Model(McF_4)	0.261	0.006	0.249	0.273
Method(OT-A):Model(McF_4)	0.203	0.006	0.192	0.215
Method(DiP):Model(McF_4)	−0.583	0.015	−0.612	−0.553
Method(CBN):Model(McF_6)	−0.104	0.004	−0.112	−0.097
Method(CBN-A):Model(McF_6)	−0.139	0.004	−0.146	−0.131
Method(OT):Model(McF_6)	−0.169	0.005	−0.179	−0.159
Method(OT-A):Model(McF_6)	0.147	0.004	0.138	0.156
Method(DiP):Model(McF_6)	−0.395	0.011	−0.418	−0.373
Method(CBN):Conjunction(No)	0.022	0.002	0.019	0.026
Method(CBN-A):Conjunction(No)	0.012	0.002	0.009	0.016
Method(OT):Conjunction(No)	−0.016	0.003	−0.021	−0.010
Method(OT-A):Conjunction(No)	−0.014	0.002	−0.019	−0.009
Method(DiP):Conjunction(No)	0.022	0.005	0.012	0.031
Method(CBN):sh(0)	0.128	0.002	0.124	0.132
Method(CBN-A):sh(0)	0.148	0.002	0.143	0.152
Method(OT):sh(0)	−0.035	0.003	−0.041	−0.028
Method(OT-A):sh(0)	−0.012	0.003	−0.017	−0.006
Method(DiP):sh(0)	−0.181	0.007	−0.194	−0.168
Method(CBN):NumNodes(7)	−0.116	0.003	−0.121	−0.111
Method(CBN-A):NumNodes(7)	−0.095	0.003	−0.101	−0.090
Method(OT):NumNodes(7)	0.104	0.004	0.097	0.112
Method(OT-A):NumNodes(7)	0.116	0.003	0.110	0.123
Method(DiP):NumNodes(7)	0.034	0.007	0.021	0.048
Method(CBN):NumNodes(9)	0.110	0.003	0.105	0.115
Method(CBN-A):NumNodes(9)	0.118	0.003	0.113	0.123
Method(OT):NumNodes(9)	−0.011	0.004	−0.019	−0.004
Method(OT-A):NumNodes(9)	0.002	0.003	−0.005	0.008
Method(DiP):NumNodes(9)	−0.172	0.007	−0.186	−0.158
S.Time(last):S.Type(singleC)	0.132	0.005	0.122	0.142
S.Time(last):S.Type(wholeT_0.01)	−0.301	0.005	−0.311	−0.291
S.Time(last):Model(Bozic)	−0.089	0.006	−0.101	−0.077
S.Time(last):Model(McF_4)	−0.120	0.006	−0.132	−0.108
S.Time(last):Model(McF_6)	0.123	0.006	0.111	0.135
S.Time(last):Conjunction(No)	−0.017	0.004	−0.024	−0.010
S.Time(last):sh(0)	−0.034	0.004	−0.042	−0.027
S.Time(last):NumNodes(7)	−0.019	0.005	−0.029	−0.009
S.Time(last):NumNodes(9)	0.021	0.005	0.011	0.031
S.Type(singleC):Model(Bozic)	−0.057	0.009	−0.074	−0.039
S.Type(wholeT_0.01):Model(Bozic)	0.167	0.009	0.150	0.184
S.Type(singleC):Model(McF_4)	0.018	0.009	0.001	0.035
S.Type(wholeT_0.01):Model(McF_4)	−0.073	0.009	−0.090	−0.056
S.Type(singleC):Model(McF_6)	0.140	0.009	0.123	0.157
S.Type(wholeT_0.01):Model(McF_6)	−0.339	0.008	−0.356	−0.322
S.Type(singleC):Conjunction(No)	0.009	0.005	−0.001	0.019
S.Type(wholeT_0.01):Conjunction(No)	−0.009	0.005	−0.019	0.001
S.Type(singleC):sh(0)	0.000	0.005	−0.010	0.010
S.Type(wholeT_0.01):sh(0)	0.021	0.005	0.011	0.031
S.Type(singleC):NumNodes(7)	−0.091	0.007	−0.106	−0.077
S.Type(wholeT_0.01):NumNodes(7)	0.241	0.007	0.227	0.255
S.Type(singleC):NumNodes(9)	0.024	0.007	0.010	0.038
S.Type(wholeT_0.01):NumNodes(9)	−0.069	0.007	−0.083	−0.055
Model(Bozic):Conjunction(No)	0.003	0.006	−0.009	0.015
Model(McF_4):Conjunction(No)	0.022	0.006	0.010	0.034
Model(McF_6):Conjunction(No)	−0.017	0.006	−0.029	−0.005
Model(Bozic):sh(0)	−0.270	0.006	−0.282	−0.258
Model(McF_4):sh(0)	0.429	0.006	0.417	0.441
Model(McF_6):sh(0)	0.480	0.006	0.468	0.492
Model(Bozic):NumNodes(7)	0.066	0.009	0.048	0.083
Model(McF_4):NumNodes(7)	0.025	0.009	0.007	0.042

Supplementary Table 37: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Model(McF_6):NumNodes(7)	0.246	0.009	0.229	0.263
Model(Bozic):NumNodes(9)	−0.030	0.009	−0.047	−0.013
Model(McF_4):NumNodes(9)	−0.020	0.009	−0.036	−0.003
Model(McF_6):NumNodes(9)	−0.127	0.009	−0.144	−0.111
Conjunction(No):sh(0)	0.011	0.004	0.004	0.018
Conjunction(No):NumNodes(7)	−0.015	0.005	−0.025	−0.005
Conjunction(No):NumNodes(9)	0.016	0.005	0.006	0.025
sh(0):NumNodes(7)	−0.079	0.005	−0.090	−0.069
sh(0):NumNodes(9)	0.034	0.005	0.024	0.044

12.2.5 Fit for 'Inferred edges', Drivers Unknown

Supplementary Table 38: Model fit for metric 'Inferred edges' when there are passengers.

Coefficient	mean	sd	0.025 quant.	0.975 quant.
(Intercept)	0.673	0.003	0.668	0.678
S.Size(100)	−0.004	0.003	−0.011	0.002
S.Size(1000)	0.079	0.003	0.073	0.086
Filter(J5)	−1.076	0.003	−1.081	−1.070
Filter(J1)	−0.097	0.002	−0.101	−0.093
Filter(S5)	0.021	0.002	0.017	0.025
Method(CBN)	0.689	0.002	0.685	0.693
Method(CBN-A)	0.704	0.002	0.700	0.709
Method(OT)	0.153	0.002	0.148	0.158
Method(OT-A)	0.406	0.002	0.401	0.410
Method(DiP)	−1.217	0.004	−1.225	−1.209
S.Time(last)	0.301	0.002	0.296	0.305
S.Type(singleC)	−0.279	0.003	−0.286	−0.273
S.Type(wholeT_0.01)	0.653	0.003	0.647	0.659
Model(Bozic)	−0.167	0.004	−0.175	−0.159
Model(McF_4)	0.219	0.004	0.211	0.227
Model(McF_6)	1.042	0.004	1.034	1.049
Conjunction(No)	0.034	0.002	0.029	0.038
sh(0)	−0.395	0.002	−0.399	−0.390
NumNodes(7)	−0.098	0.003	−0.105	−0.092
NumNodes(9)	−0.140	0.003	−0.147	−0.134
S.Size(100):Filter(J5)	−0.114	0.003	−0.119	−0.108
S.Size(1000):Filter(J5)	0.115	0.003	0.110	0.121
S.Size(100):Filter(J1)	0.201	0.002	0.197	0.205
S.Size(1000):Filter(J1)	−0.130	0.002	−0.134	−0.126
S.Size(100):Filter(S5)	−0.078	0.002	−0.082	−0.074
S.Size(1000):Filter(S5)	0.071	0.002	0.067	0.075
S.Size(100):Method(CBN)	0.329	0.002	0.325	0.333
S.Size(1000):Method(CBN)	−0.381	0.002	−0.385	−0.378
S.Size(100):Method(CBN-A)	0.326	0.002	0.322	0.330
S.Size(1000):Method(CBN-A)	−0.376	0.002	−0.380	−0.372
S.Size(100):Method(OT)	0.240	0.002	0.235	0.245
S.Size(1000):Method(OT)	−0.294	0.002	−0.299	−0.289
S.Size(100):Method(OT-A)	0.245	0.002	0.240	0.249
S.Size(1000):Method(OT-A)	−0.294	0.002	−0.298	−0.290
S.Size(100):Method(DiP)	−0.529	0.005	−0.539	−0.519
S.Size(1000):Method(DiP)	0.740	0.004	0.733	0.748
S.Size(100):S.Time(last)	−0.094	0.003	−0.100	−0.088
S.Size(1000):S.Time(last)	0.088	0.003	0.082	0.094
S.Size(100):S.Type(singleC)	0.031	0.004	0.022	0.039
S.Size(1000):S.Type(singleC)	−0.044	0.004	−0.053	−0.035
S.Size(100):S.Type(wholeT_0.01)	−0.078	0.004	−0.086	−0.069
S.Size(1000):S.Type(wholeT_0.01)	0.073	0.004	0.065	0.082
S.Size(100):Model(Bozic)	0.147	0.005	0.137	0.158
S.Size(1000):Model(Bozic)	−0.139	0.005	−0.150	−0.128
S.Size(100):Model(McF_4)	−0.073	0.005	−0.083	−0.063
S.Size(1000):Model(McF_4)	0.063	0.005	0.053	0.073
S.Size(100):Model(McF_6)	−0.161	0.005	−0.171	−0.151
S.Size(1000):Model(McF_6)	0.102	0.005	0.092	0.112
S.Size(100):Conjunction(No)	−0.009	0.003	−0.014	−0.003
S.Size(1000):Conjunction(No)	0.012	0.003	0.006	0.018
S.Size(100):sh(0)	0.038	0.003	0.032	0.044
S.Size(1000):sh(0)	−0.021	0.003	−0.027	−0.015
S.Size(100):NumNodes(7)	0.012	0.004	0.004	0.021
S.Size(1000):NumNodes(7)	−0.019	0.004	−0.028	−0.011
S.Size(100):NumNodes(9)	0.007	0.004	−0.001	0.015
S.Size(1000):NumNodes(9)	−0.005	0.004	−0.014	0.003
Filter(J5):Method(CBN)	−0.140	0.004	−0.148	−0.132
Filter(J1):Method(CBN)	−0.113	0.003	−0.119	−0.108

Supplementary Table 38: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Filter(S5):Method(CBN)	−0.049	0.003	−0.055	−0.044
Filter(J5):Method(CBN-A)	−0.013	0.004	−0.020	−0.005
Filter(J1):Method(CBN-A)	−0.119	0.003	−0.125	−0.113
Filter(S5):Method(CBN-A)	−0.098	0.003	−0.104	−0.093
Filter(J5):Method(OT)	−0.050	0.005	−0.059	−0.041
Filter(J1):Method(OT)	0.004	0.003	−0.002	0.011
Filter(S5):Method(OT)	0.008	0.003	0.001	0.014
Filter(J5):Method(OT-A)	0.048	0.004	0.040	0.056
Filter(J1):Method(OT-A)	−0.002	0.003	−0.008	0.004
Filter(S5):Method(OT-A)	−0.008	0.003	−0.014	−0.002
Filter(J5):Method(DiP)	0.000	0.007	−0.014	0.014
Filter(J1):Method(DiP)	0.115	0.005	0.105	0.126
Filter(S5):Method(DiP)	0.094	0.005	0.085	0.104
Filter(J5):S.Time(last)	0.154	0.002	0.150	0.158
Filter(J1):S.Time(last)	−0.054	0.001	−0.057	−0.052
Filter(S5):S.Time(last)	0.095	0.001	0.092	0.098
Filter(J5):S.Type(singleC)	−0.006	0.003	−0.012	−0.001
Filter(J1):S.Type(singleC)	−0.086	0.002	−0.091	−0.082
Filter(S5):S.Type(singleC)	−0.008	0.002	−0.012	−0.004
Filter(J5):S.Type(wholeT_0.01)	0.009	0.003	0.004	0.014
Filter(J1):S.Type(wholeT_0.01)	0.169	0.002	0.165	0.173
Filter(S5):S.Type(wholeT_0.01)	0.014	0.002	0.010	0.017
Filter(J5):Model(Bozic)	−0.168	0.004	−0.177	−0.160
Filter(J1):Model(Bozic)	0.154	0.003	0.148	0.159
Filter(S5):Model(Bozic)	−0.034	0.003	−0.039	−0.029
Filter(J5):Model(McF_4)	0.094	0.004	0.086	0.101
Filter(J1):Model(McF_4)	−0.291	0.003	−0.297	−0.285
Filter(S5):Model(McF_4)	0.059	0.003	0.054	0.064
Filter(J5):Model(McF_6)	0.428	0.003	0.422	0.434
Filter(J1):Model(McF_6)	−0.043	0.002	−0.047	−0.038
Filter(S5):Model(McF_6)	0.006	0.002	0.002	0.010
Filter(J5):Conjunction(No)	−0.019	0.002	−0.023	−0.016
Filter(J1):Conjunction(No)	−0.008	0.001	−0.011	−0.005
Filter(S5):Conjunction(No)	0.041	0.001	0.038	0.043
Filter(J5):sh(0)	−0.010	0.002	−0.013	−0.006
Filter(J1):sh(0)	−0.053	0.002	−0.056	−0.050
Filter(S5):sh(0)	0.013	0.001	0.010	0.016
Filter(J5):NumNodes(7)	0.208	0.003	0.203	0.213
Filter(J1):NumNodes(7)	0.018	0.002	0.014	0.022
Filter(S5):NumNodes(7)	−0.192	0.002	−0.196	−0.188
Filter(J5):NumNodes(9)	−0.111	0.003	−0.117	−0.106
Filter(J1):NumNodes(9)	−0.014	0.002	−0.018	−0.010
Filter(S5):NumNodes(9)	0.052	0.002	0.048	0.056
Method(CBN):S.Time(last)	0.133	0.001	0.131	0.136
Method(CBN-A):S.Time(last)	0.083	0.001	0.080	0.085
Method(OT):S.Time(last)	−0.107	0.002	−0.110	−0.104
Method(OT-A):S.Time(last)	0.111	0.002	0.108	0.114
Method(DiP):S.Time(last)	−0.260	0.003	−0.265	−0.255
Method(CBN):S.Type(singleC)	0.052	0.002	0.048	0.056
Method(CBN-A):S.Type(singleC)	0.062	0.002	0.058	0.066
Method(OT):S.Type(singleC)	0.015	0.003	0.010	0.020
Method(OT-A):S.Type(singleC)	0.024	0.002	0.020	0.029
Method(DiP):S.Type(singleC)	−0.081	0.004	−0.090	−0.072
Method(CBN):S.Type(wholeT_0.01)	−0.097	0.002	−0.100	−0.093
Method(CBN-A):S.Type(wholeT_0.01)	−0.126	0.002	−0.130	−0.122
Method(OT):S.Type(wholeT_0.01)	−0.035	0.002	−0.039	−0.031
Method(OT-A):S.Type(wholeT_0.01)	−0.055	0.002	−0.059	−0.051
Method(DiP):S.Type(wholeT_0.01)	0.166	0.004	0.159	0.174
Method(CBN):Model(Bozic)	0.009	0.002	0.004	0.014
Method(CBN-A):Model(Bozic)	−0.011	0.003	−0.015	−0.006
Method(OT):Model(Bozic)	−0.056	0.003	−0.062	−0.049
Method(OT-A):Model(Bozic)	−0.097	0.003	−0.103	−0.091

Supplementary Table 38: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Method(DiP):Model(Bozic)	0.139	0.005	0.129	0.149
Method(CBN):Model(McF_4)	0.082	0.002	0.077	0.086
Method(CBN-A):Model(McF_4)	0.062	0.002	0.057	0.067
Method(OT):Model(McF_4)	0.064	0.003	0.058	0.070
Method(OT-A):Model(McF_4)	0.045	0.003	0.039	0.050
Method(DiP):Model(McF_4)	−0.144	0.005	−0.155	−0.134
Method(CBN):Model(McF_6)	−0.172	0.002	−0.177	−0.168
Method(CBN-A):Model(McF_6)	−0.167	0.002	−0.172	−0.163
Method(OT):Model(McF_6)	−0.019	0.003	−0.024	−0.013
Method(OT-A):Model(McF_6)	0.070	0.002	0.065	0.074
Method(DiP):Model(McF_6)	−0.034	0.004	−0.043	−0.026
Method(CBN):Conjunction(No)	−0.016	0.001	−0.019	−0.014
Method(CBN-A):Conjunction(No)	−0.025	0.001	−0.027	−0.022
Method(OT):Conjunction(No)	0.004	0.002	0.001	0.007
Method(OT-A):Conjunction(No)	0.003	0.001	0.000	0.006
Method(DiP):Conjunction(No)	0.035	0.003	0.030	0.041
Method(CBN):sh(0)	−0.026	0.001	−0.029	−0.023
Method(CBN-A):sh(0)	−0.014	0.001	−0.017	−0.011
Method(OT):sh(0)	−0.063	0.002	−0.066	−0.060
Method(OT-A):sh(0)	−0.052	0.002	−0.055	−0.049
Method(DiP):sh(0)	0.121	0.003	0.115	0.126
Method(CBN):NumNodes(7)	−0.024	0.002	−0.028	−0.020
Method(CBN-A):NumNodes(7)	0.043	0.002	0.039	0.046
Method(OT):NumNodes(7)	−0.028	0.002	−0.033	−0.024
Method(OT-A):NumNodes(7)	0.236	0.002	0.232	0.240
Method(DiP):NumNodes(7)	−0.314	0.004	−0.323	−0.305
Method(CBN):NumNodes(9)	0.083	0.002	0.080	0.087
Method(CBN-A):NumNodes(9)	0.058	0.002	0.054	0.062
Method(OT):NumNodes(9)	−0.032	0.002	−0.037	−0.028
Method(OT-A):NumNodes(9)	−0.097	0.002	−0.101	−0.092
Method(DiP):NumNodes(9)	0.049	0.004	0.041	0.057
S.Time(last):S.Type(singleC)	0.061	0.003	0.055	0.067
S.Time(last):S.Type(wholeT_0.01)	−0.152	0.003	−0.158	−0.146
S.Time(last):Model(Bozic)	0.012	0.004	0.004	0.019
S.Time(last):Model(McF_4)	−0.085	0.004	−0.093	−0.078
S.Time(last):Model(McF_6)	−0.111	0.004	−0.119	−0.104
S.Time(last):Conjunction(No)	−0.005	0.002	−0.009	−0.001
S.Time(last):sh(0)	−0.003	0.002	−0.007	0.001
S.Time(last):NumNodes(7)	−0.128	0.003	−0.134	−0.122
S.Time(last):NumNodes(9)	0.059	0.003	0.053	0.065
S.Type(singleC):Model(Bozic)	−0.101	0.005	−0.112	−0.091
S.Type(wholeT_0.01):Model(Bozic)	0.281	0.005	0.270	0.291
S.Type(singleC):Model(McF_4)	0.075	0.005	0.065	0.085
S.Type(wholeT_0.01):Model(McF_4)	−0.204	0.005	−0.214	−0.194
S.Type(singleC):Model(McF_6)	0.173	0.005	0.163	0.183
S.Type(wholeT_0.01):Model(McF_6)	−0.420	0.005	−0.430	−0.410
S.Type(singleC):Conjunction(No)	0.007	0.003	0.001	0.013
S.Type(wholeT_0.01):Conjunction(No)	−0.009	0.003	−0.015	−0.003
S.Type(singleC):sh(0)	−0.005	0.003	−0.011	0.001
S.Type(wholeT_0.01):sh(0)	0.043	0.003	0.037	0.049
S.Type(singleC):NumNodes(7)	−0.009	0.004	−0.017	0.000
S.Type(wholeT_0.01):NumNodes(7)	0.048	0.004	0.040	0.057
S.Type(singleC):NumNodes(9)	−0.011	0.004	−0.020	−0.002
S.Type(wholeT_0.01):NumNodes(9)	0.010	0.004	0.002	0.018
Model(Bozic):Conjunction(No)	0.002	0.004	−0.005	0.010
Model(McF_4):Conjunction(No)	0.032	0.004	0.025	0.039
Model(McF_6):Conjunction(No)	−0.031	0.004	−0.038	−0.024
Model(Bozic):sh(0)	−0.233	0.004	−0.240	−0.225
Model(McF_4):sh(0)	0.406	0.004	0.399	0.413
Model(McF_6):sh(0)	0.419	0.004	0.412	0.426
Model(Bozic):NumNodes(7)	0.107	0.005	0.096	0.117
Model(McF_4):NumNodes(7)	−0.045	0.005	−0.055	−0.034

Supplementary Table 38: *(continued)*

Coefficient	mean	sd	0.025 quant.	0.975 quant.
Model(McF_6):NumNodes(7)	0.000	0.005	−0.010	0.010
Model(Bozic):NumNodes(9)	−0.041	0.005	−0.052	−0.031
Model(McF_4):NumNodes(9)	0.026	0.005	0.015	0.036
Model(McF_6):NumNodes(9)	−0.002	0.005	−0.012	0.008
Conjunction(No):sh(0)	0.007	0.002	0.003	0.011
Conjunction(No):NumNodes(7)	−0.005	0.003	−0.011	0.001
Conjunction(No):NumNodes(9)	0.016	0.003	0.010	0.022
sh(0):NumNodes(7)	0.009	0.003	0.003	0.015
sh(0):NumNodes(9)	−0.023	0.003	−0.029	−0.017

13 Choosing augmented alternatives

The tables below show how often the augmented or non-agumented alternatives are better. Using within-data set comparisons for each pair of methods (e.g., DiP and DiP-A) I count a case as better is Diff is smaller. Values in each cell are proportions. They need not sum to 1 over each two columns, as in many cases the Diff were equal.

	At least a gene freq.= 1		No gene freq.= 1	
	Augmented better	Augmented worse	Augmented better	Augmented worse
CBN	0.51	0.40	0.50	0.40
DiP	0.63	0.05	0.16	0.04
OT	0.94	0.06	0.14	0.07

Supplementary Table 39: Comparison of augmented and non augmented alternatives in the Drivers Known scenario.

	At least a gene freq.= 1		No gene freq.= 1	
	Augmented better	Augmented worse	Augmented better	Augmented worse
CBN	0.48	0.30	0.37	0.26
DiP	0.63	0.05	0.12	0.04
OT	0.87	0.06	0.13	0.07

Supplementary Table 40: Comparison of augmented and non augmented alternatives when Drivers are Unknown and Filtering = S5.

14 Understanding the different ranking compared to Hainke

There are several possible explanations for the differences between my results and those of Hainke *et al.* (2012), especially as reflected in their Table 4, p. 631, where OT is second to CBN in both the graph with conjunctions (last column of their table) and the tree without conjunctions (first column).

Differences in metric There are no differences in metric, since the "ged" used in Hainke *et al.* (2012) is the same as the Diff we use here.

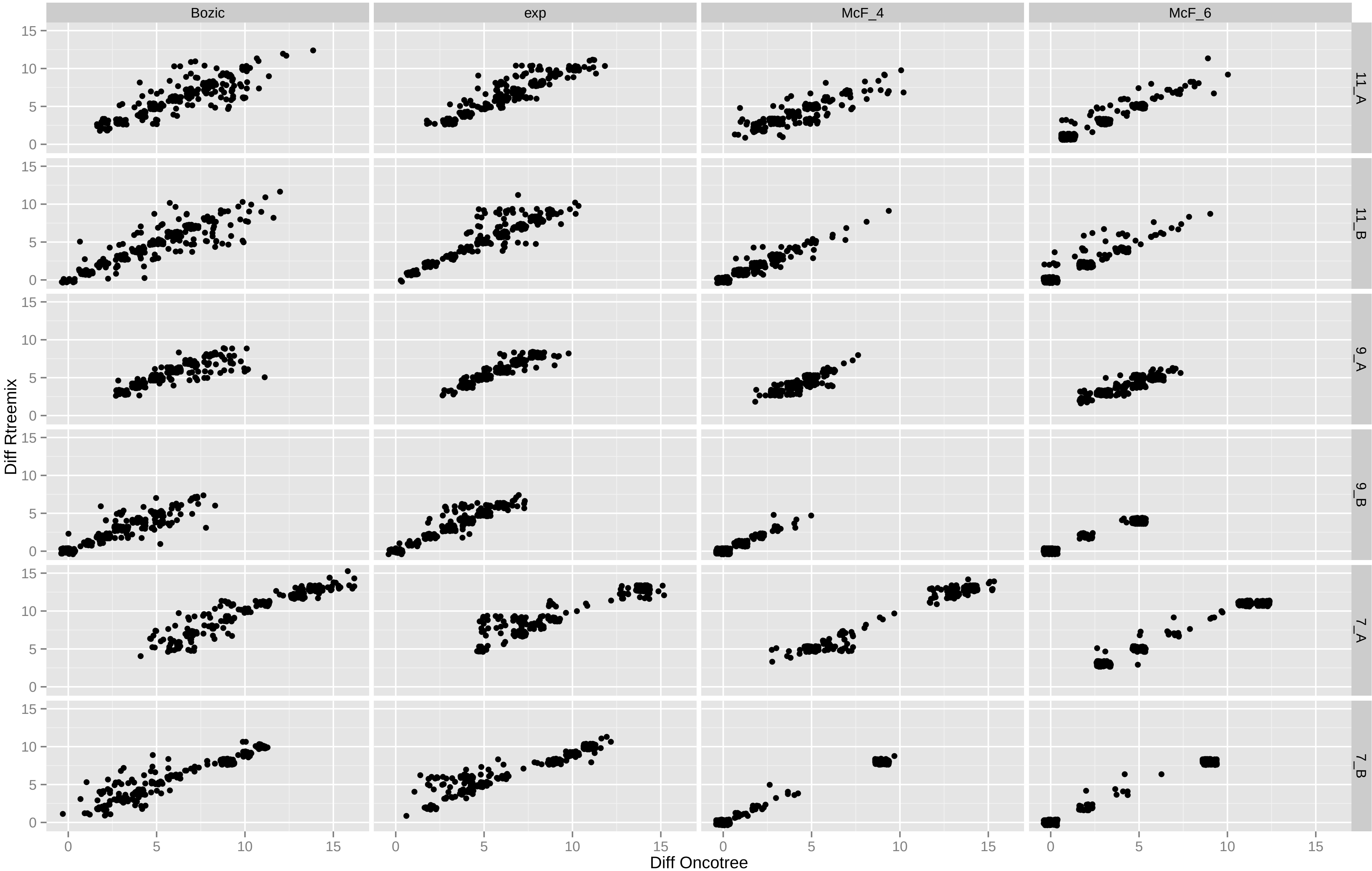
Differences in software for fitting oncogenetic tree models Hainke *et al.* (2012) fit oncogenetic trees using the Rtreemix package (Bogojeska, 2014) instead of Oncotree (Szabo and Pappas, 2013). To examine this difference as a possible cause, I reanalized all the data from the Drivers Known scenario (under the single cell sampling type) with Rtreemix and computed the Diff metric; results are shown in figures 18 and 19, in scetion 14.1. The two methods often, but not always, yield identical results. When they differ, though, there are no systematic deviations where Rtreemix consistently performs worse than Oncotree and, thus, usage of Rtreemix instead of Oncotree is not an explanation. I use the single cell sampling data since those are the ones that are likely to generate patterns of marginal and joint frequencies of mutations that are closest to those that can be obtain from the simulation procedures used in Hainke *et al.* (2012).

Differences in software for fitting CBN models I fitted CBN using the h-cbn program as described in Gerstung *et al.* (2011), which is an implementation of the version of CBN described in Gerstung *et al.* (2009), whereas Hainke *et al.* (2012) used a version of CBN that is no longer available, and that fits the approach described in Beerenwinkel *et al.* (2007a) (K. Hainke, pers. comm.). It is possible, though unlikely, that the newer version of CBN shows worse performance (at least regarding Diff) than the older version. If that were the explanation, however, from a user's point of view the relevant results are the ones presented here, since they refer to the currently available software implementation of CBN.

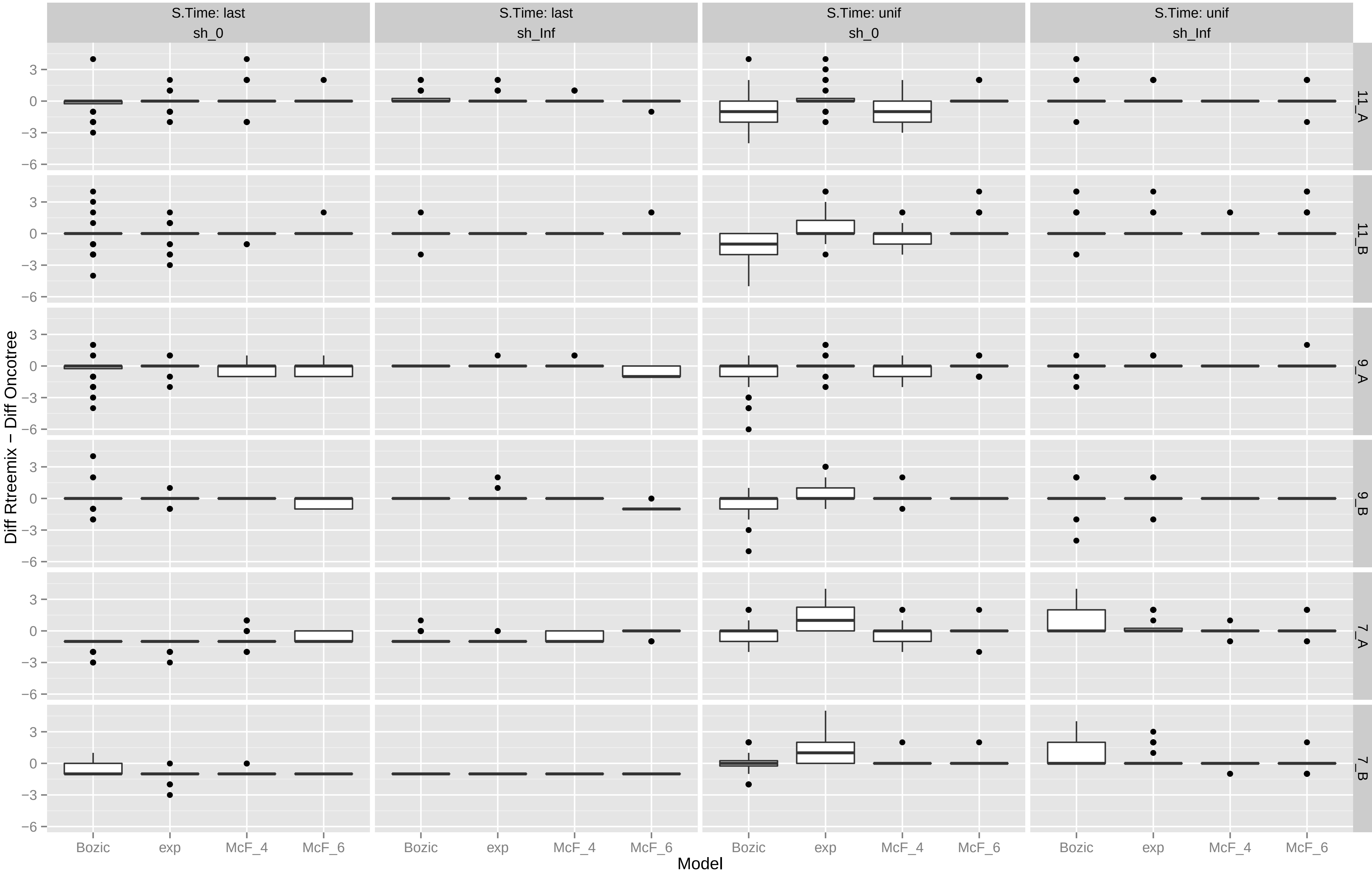
Chance reversal of orderings Hainke *et al.* (2012) use a single graph for each of the scenarios, whereas I use three here, making it more likely that their results can be attributed to a chance reversal of orderings. This is not the most likely explanation, however, since the reversal affects both the CBN and the OT scenario of their Table 4.

Differences in graphs and results in Hainke et al. based on a single graph This is discussed in the ms. As can be seen in the figures in section 14.2, CBN outperforms OT in a small subset of scenarios for only graphs 7A and 7B, the two graphs with smaller number of nodes. Hainke *et al.* (2012) use for the oncogenetic graph scenario a single graph of five nodes and for the CBN scenario a single graph with four nodes. Note that the situations where CBN outperforms OT are essentially the same whether we use OT models fitted with the Oncotree package (Szabo and Pappas, 2013) or the Rtreemix package (Bogojeska, 2014). In addition, note that CBN outperforms OT precisely in those evolutionary scenarios (exp and Bozic, especially when S. Time = last) where clones with few drivers have not been swept out of the population.

14.1 Comparison of Diff between Oncotree and Rtreemix



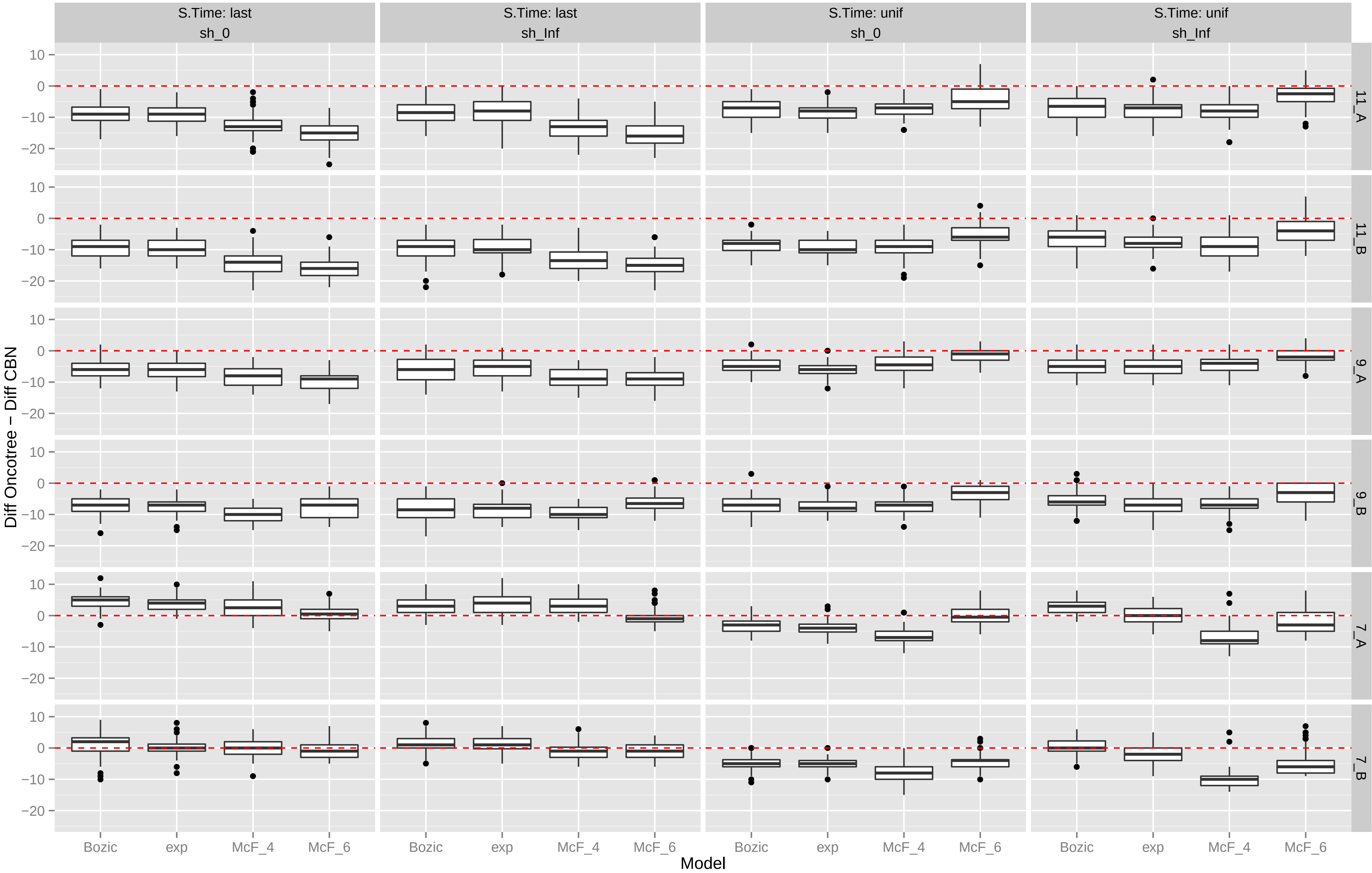
Supplementary Figure 18: Scatterplot of Diff metric computed with Rtreemix and Oncotree for the 5760 samples with Drivers Known and S. Type of single cell. Data have been jittered to minimize superposition of points.



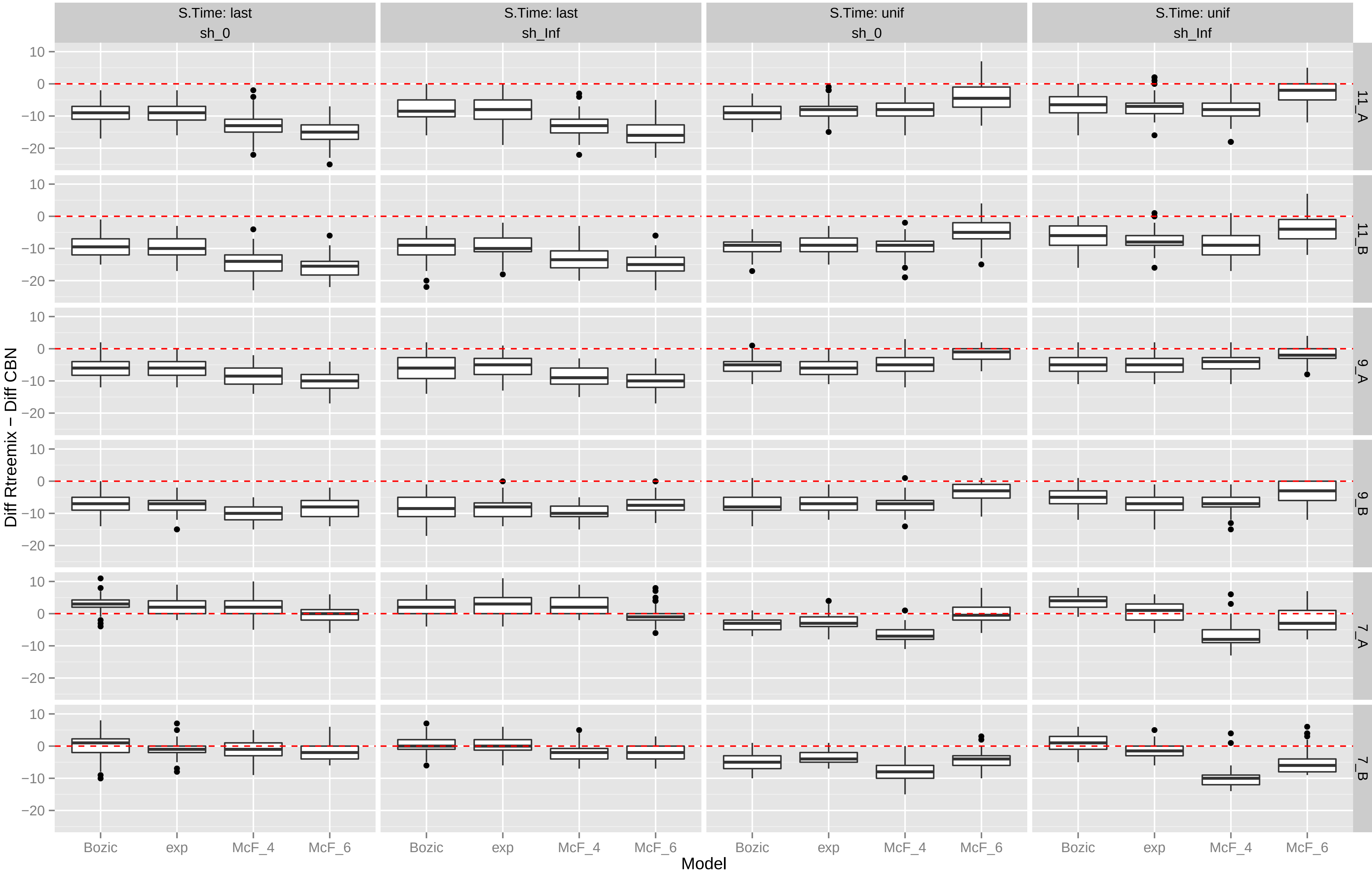
Supplementary Figure 19: Boxplots of the within dataset difference in Diff between Rtreemix and Oncotree for the 5760 samples with Drivers Known and S. Type of single cell. Each boxplot represents a total of 60 data sets (three sample sizes * 20 replicates per condition).

14.2 Difference in Diff between CBN and Oncotree/Rtreemix

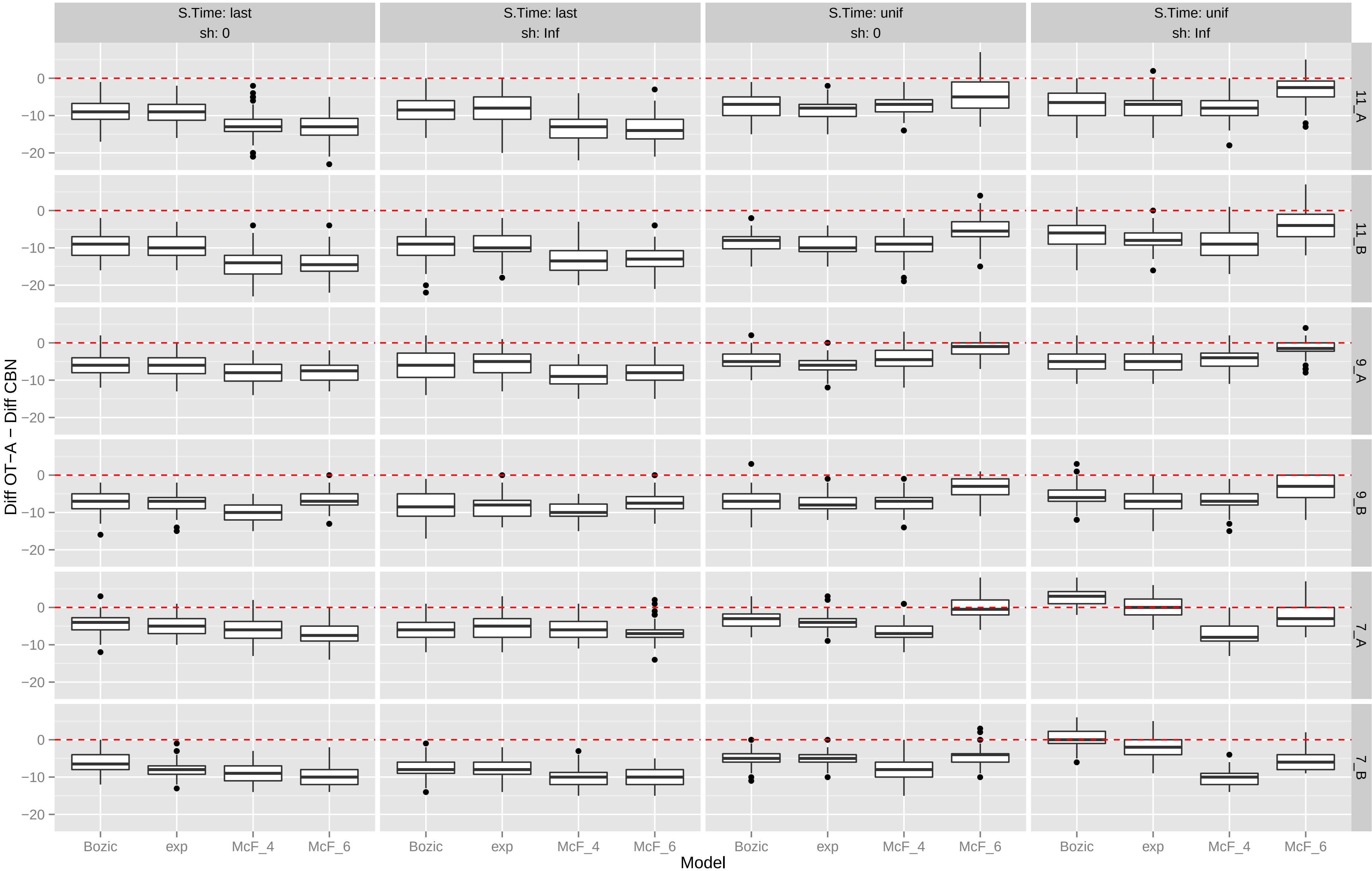
The next figures show the within dataset difference in Diff between CBN and OT when fitted with the Szabo and Pappas (2013) package, or between CBN and OT when fitted with the Bogojeska (2014) package.



Supplementary Figure 20: Boxplots of the within dataset difference in Diff between CBN and Oncotree for the 5760 samples with Drivers Known and S. Type of single cell. Each boxplot represents a total of 60 data sets (three sample sizes * 20 replicates per condition). Values above the red horizontal line mean that CBN performs better.



Supplementary Figure 21: Boxplots of the within dataset difference in Diff between CBN and Rtreemix for the 5760 samples with Drivers Known and S. Type of single cell. Each boxplot represents a total of 60 data sets (three sample sizes * 20 replicates per condition). Values above the red horizontal line mean that CBN performs better.



Supplementary Figure 22: Boxplots of the within dataset difference in Diff between CBN and the OT-A method (fitted with the Oncotree package, after adding the 0.1 fraction of all zeroes) for the 5760 samples with Drivers Known and S. Type of single cell. Each boxplot represents a total of 60 data sets (three sample sizes * 20 replicates per condition). Values above the red horizontal line mean that CBN performs better.

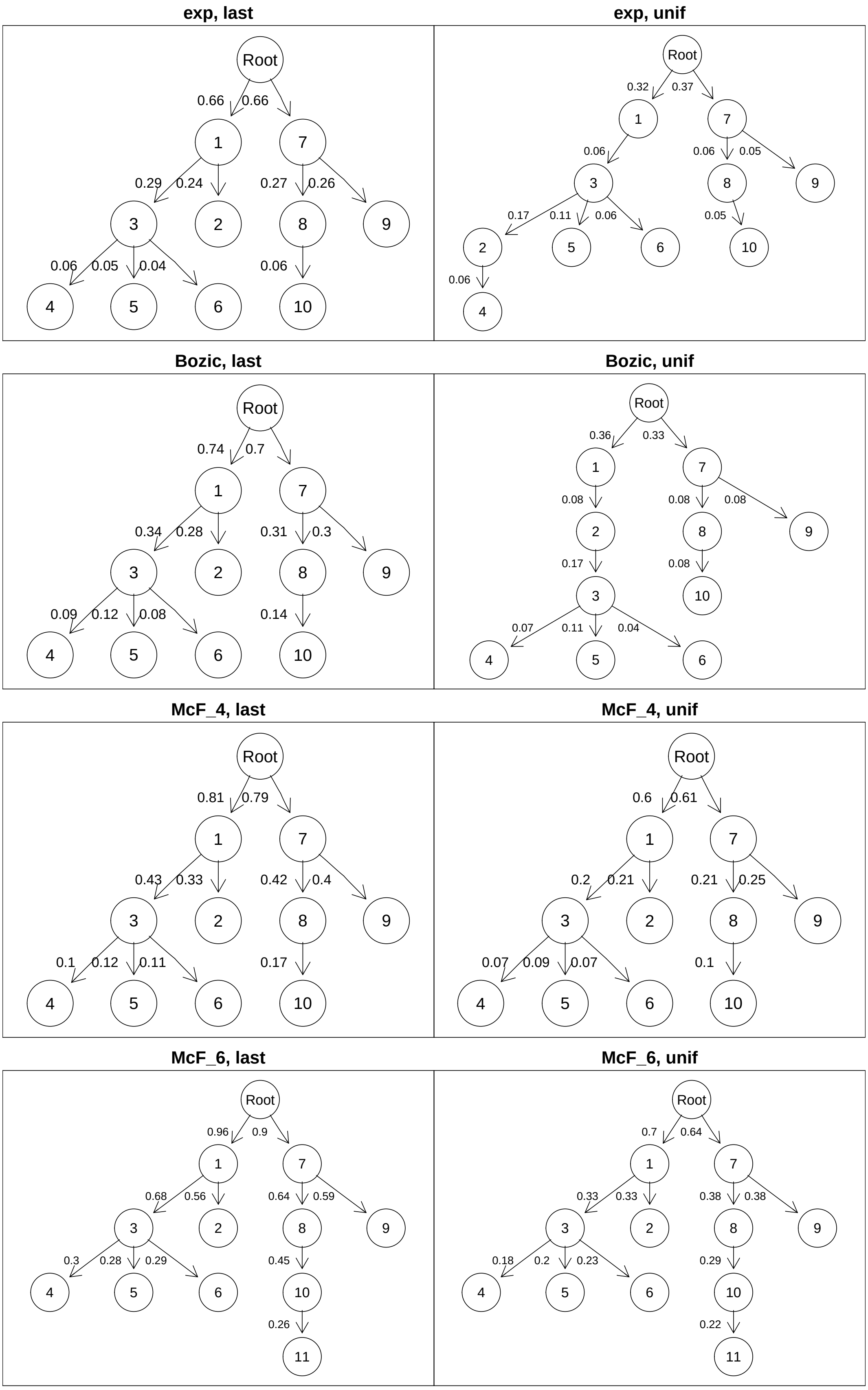
15 Examples of fitted oncogenetic trees and estimated conditional probabilities

The first three figures show reconstructed oncogenetic trees (selected randomly from the set of 20 trees) for graphs 11-B, 9-B and 7-B, and include the estimated conditional probabilities returned by package Oncotree (Szabo and Pappas, 2013). All of the figures correspond to S. type = single cell and $s_h = Inf$, since this is the sampling type and s_h that should produce clone frequencies that are most comparable to those obtainable from simulating directly from the oncogenetic trees themselves. S.Size is 1000, since this is the sample size that produces the best trees and the purpose of these figures is to illustrate variation in fitted conditional probabilities for the best trees.

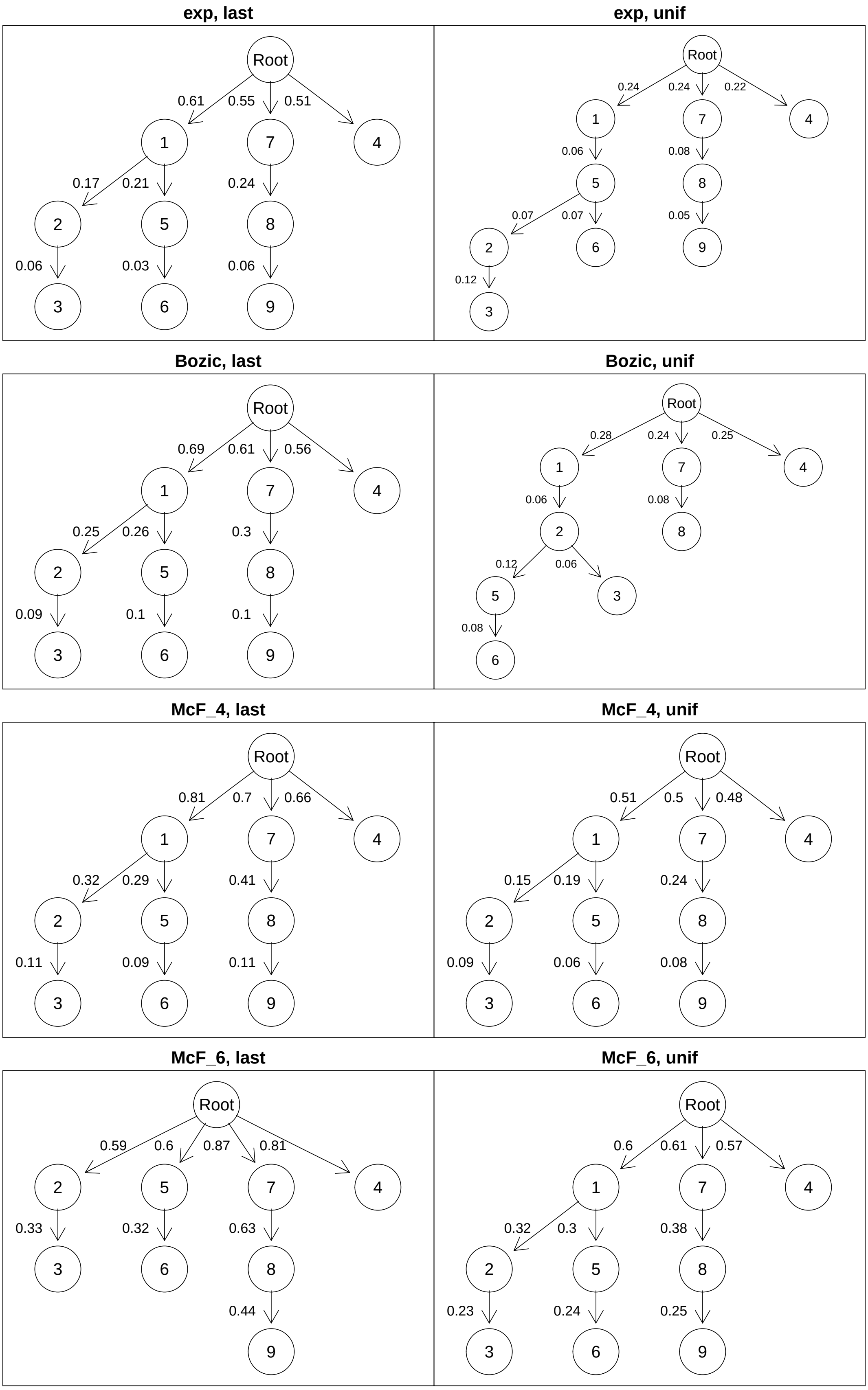
The next set of three figures are similar to the first ones, but instead of using the results from S. Type = single cell, I have used those from S. Type = whole tumor, with threshold of 0.01.

After those, we repeat the figures for S. Type = single cell, but using all data for each scenario, so instead of showing one randomly selected tree for S. Size = 1000, we put together all data sets, and reconstruct the tree using a total of 26000 samples ($= 20 * (1000 + 200 + 100)$). This allows us to minimize variability in the estimates.

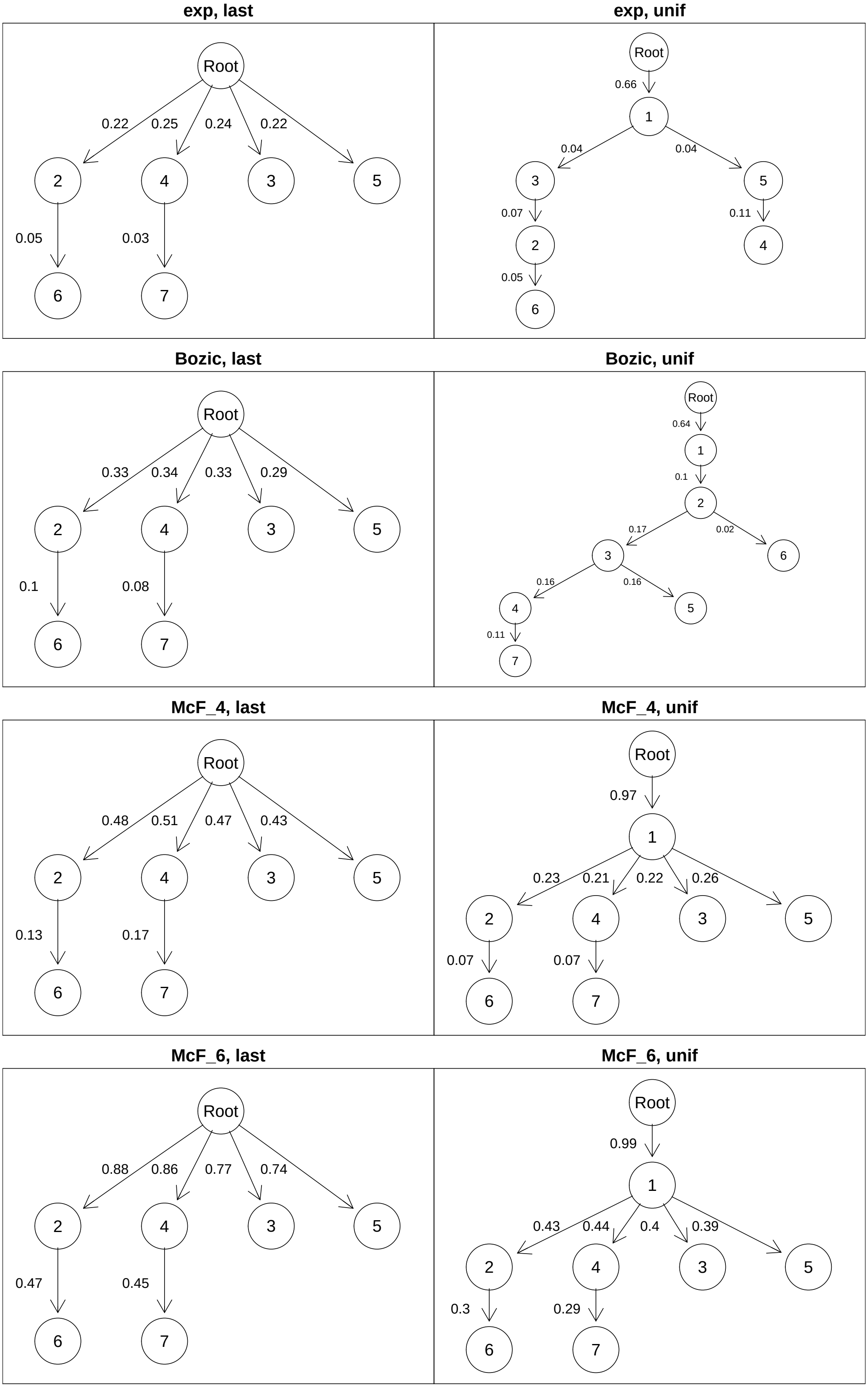
15.1 S. Type = single cell



Supplementary Figure 23: Fitted oncogenetic trees for 11-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for single cell sampling, sh = Inf, S. Size = 1000, for tree 11-B.

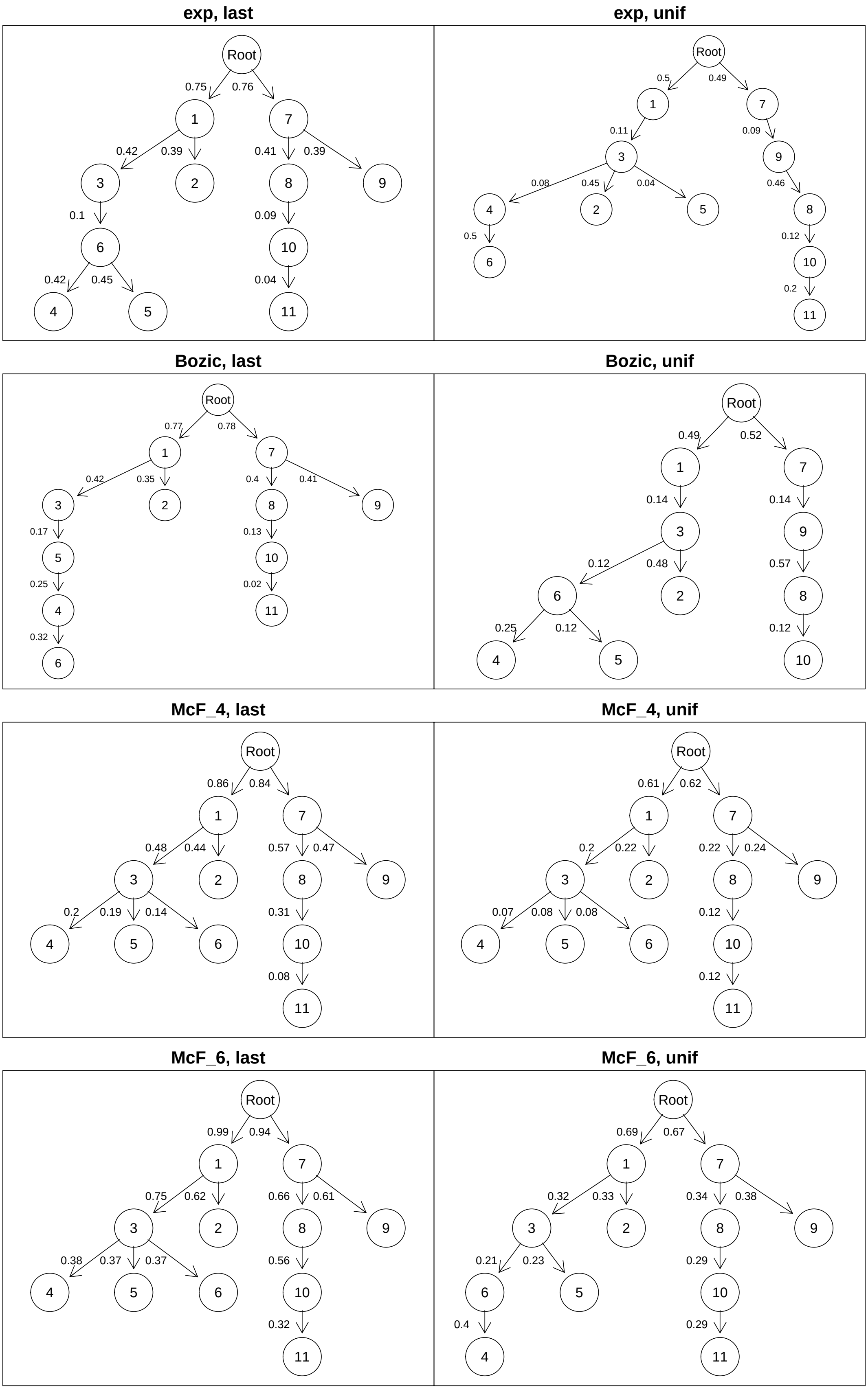


Supplementary Figure 24: Fitted oncogenetic trees for 9-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for single cell sampling, sh = Inf, S. Size = 1000, for tree 9-B.

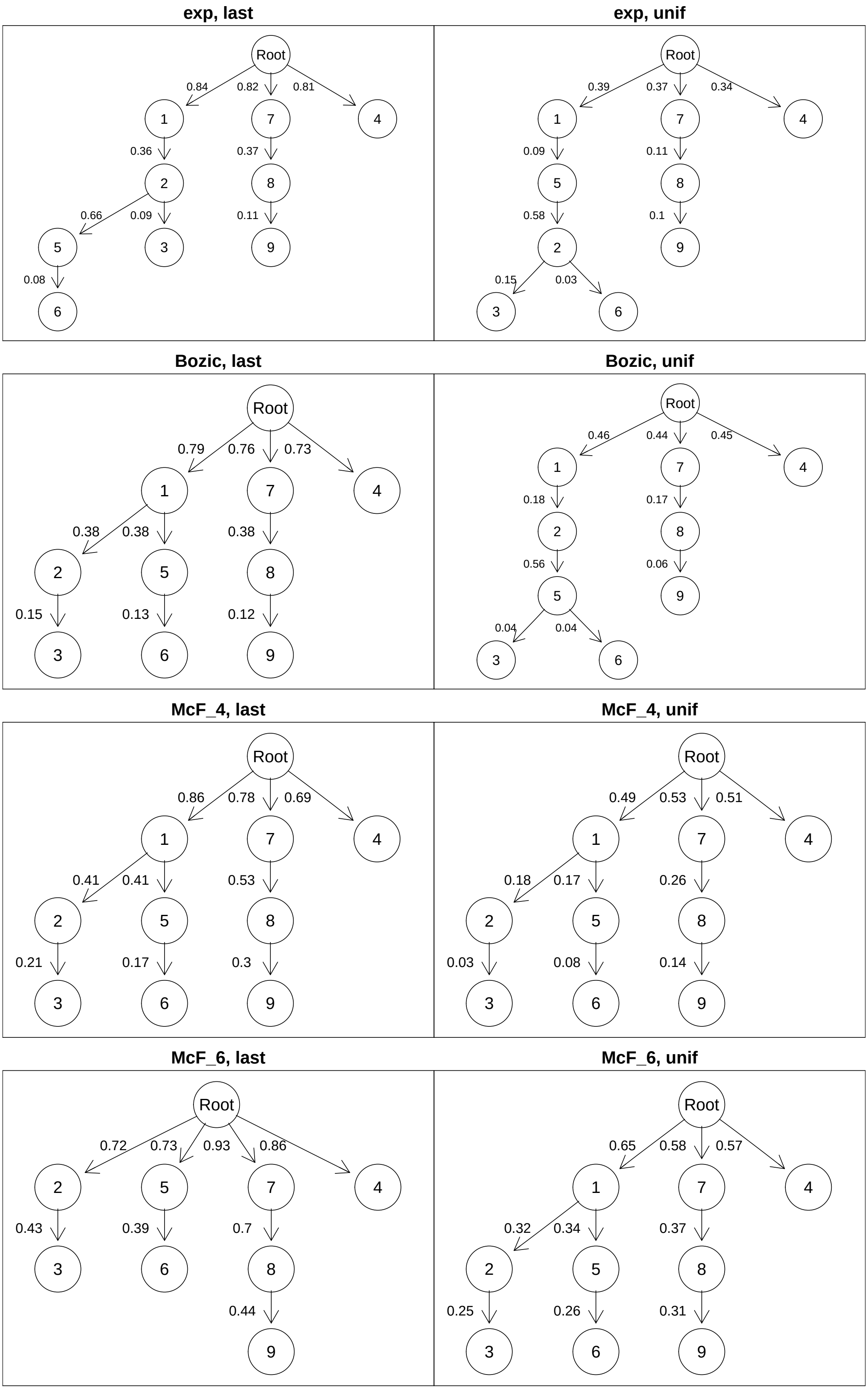


Supplementary Figure 25: Fitted oncogenetic trees for 7-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for single cell sampling, sh = Inf, S. Size = 1000, for tree 7-B. This figure also illustrates that under S. Time = last, the first node is often missing with OT.

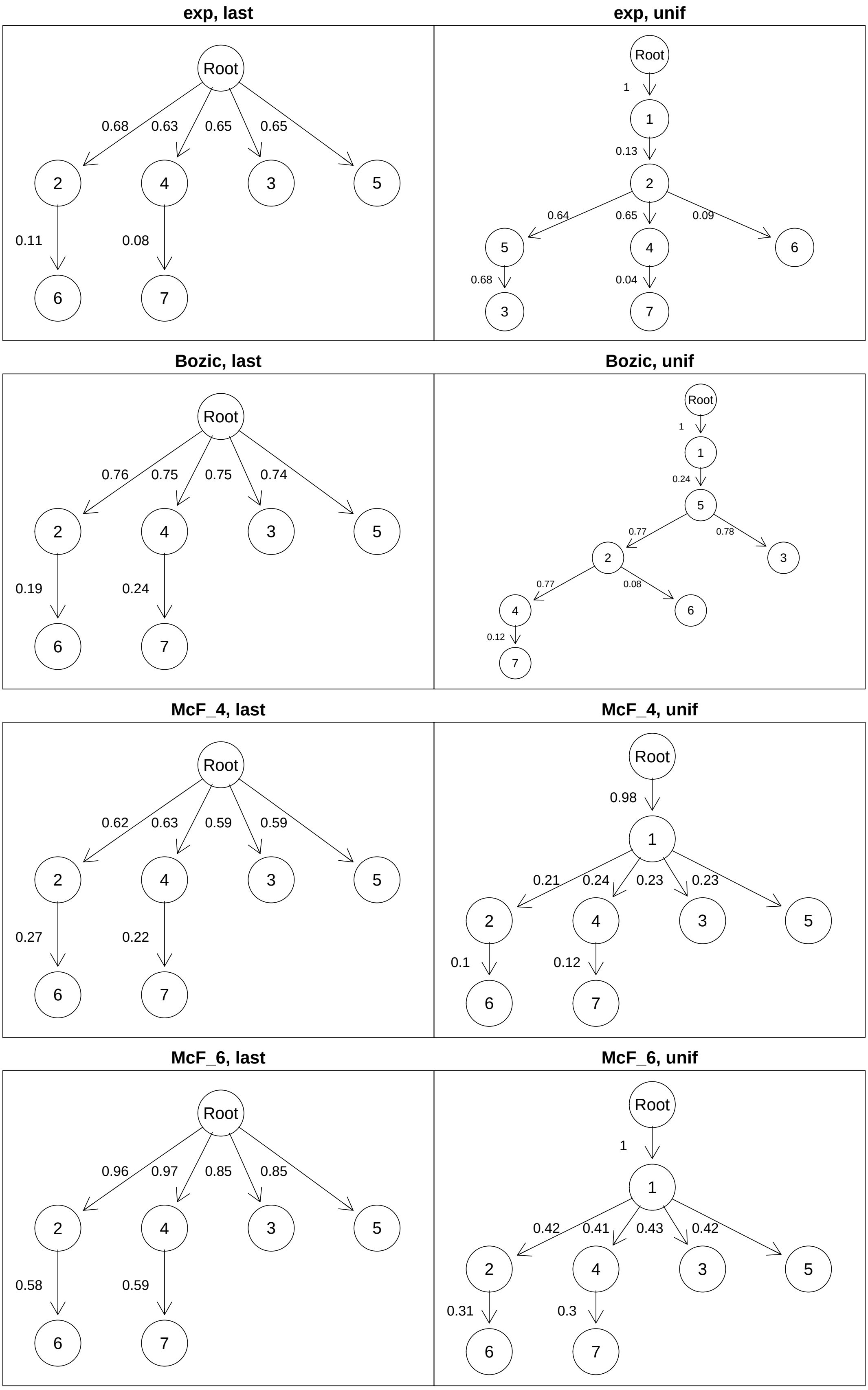
15.2 S. Type = whole tumor, threshold of detection 0.01



Supplementary Figure 26: Fitted oncogenetic trees for 11-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for whole tumor sampling with threshold 0.01, sh = Inf, S. Size = 1000, for tree 11-B.

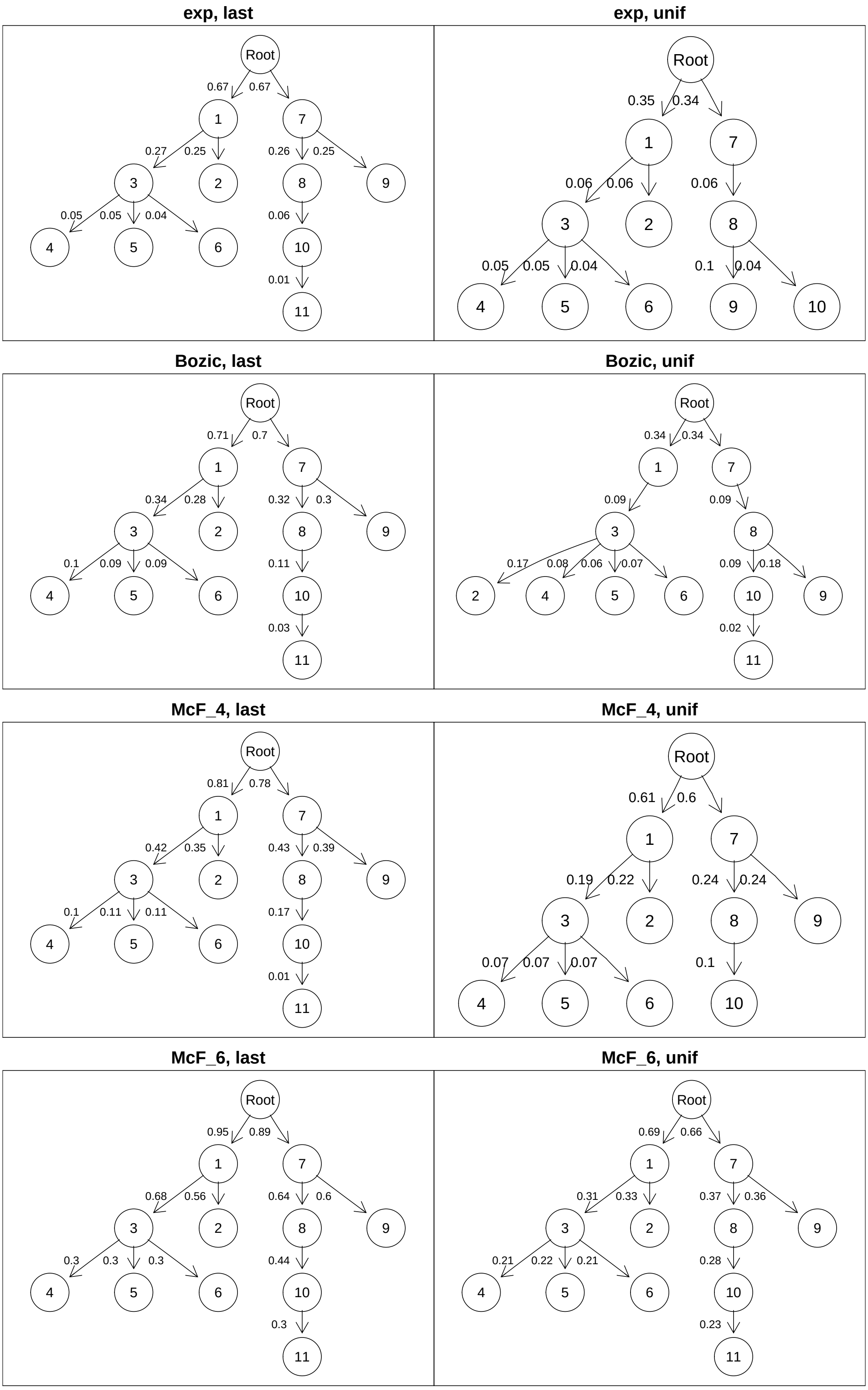


Supplementary Figure 27: Fitted oncogenetic trees for 9-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for whole tumor sampling with threshold 0.01, sh = Inf, S. Size = 1000, for tree 9-B.

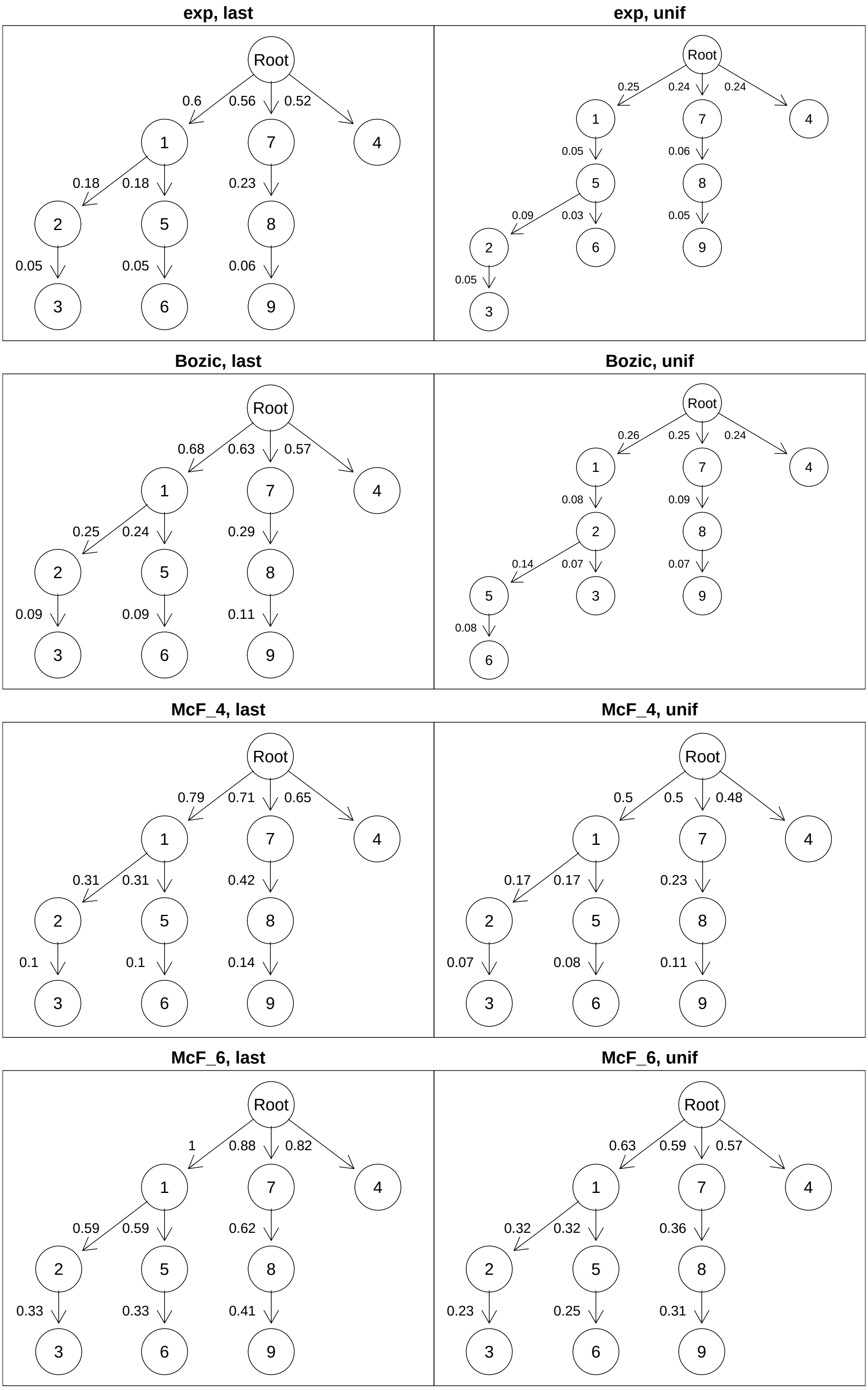


Supplementary Figure 28: Fitted oncogenetic trees for 7-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for whole tumor sampling with threshold 0.01, sh = Inf, S. Size = 1000, for tree 7-B. None of the edges shown have an observed frequency of occurrence of 1; those are the estimated conditional probabilities.

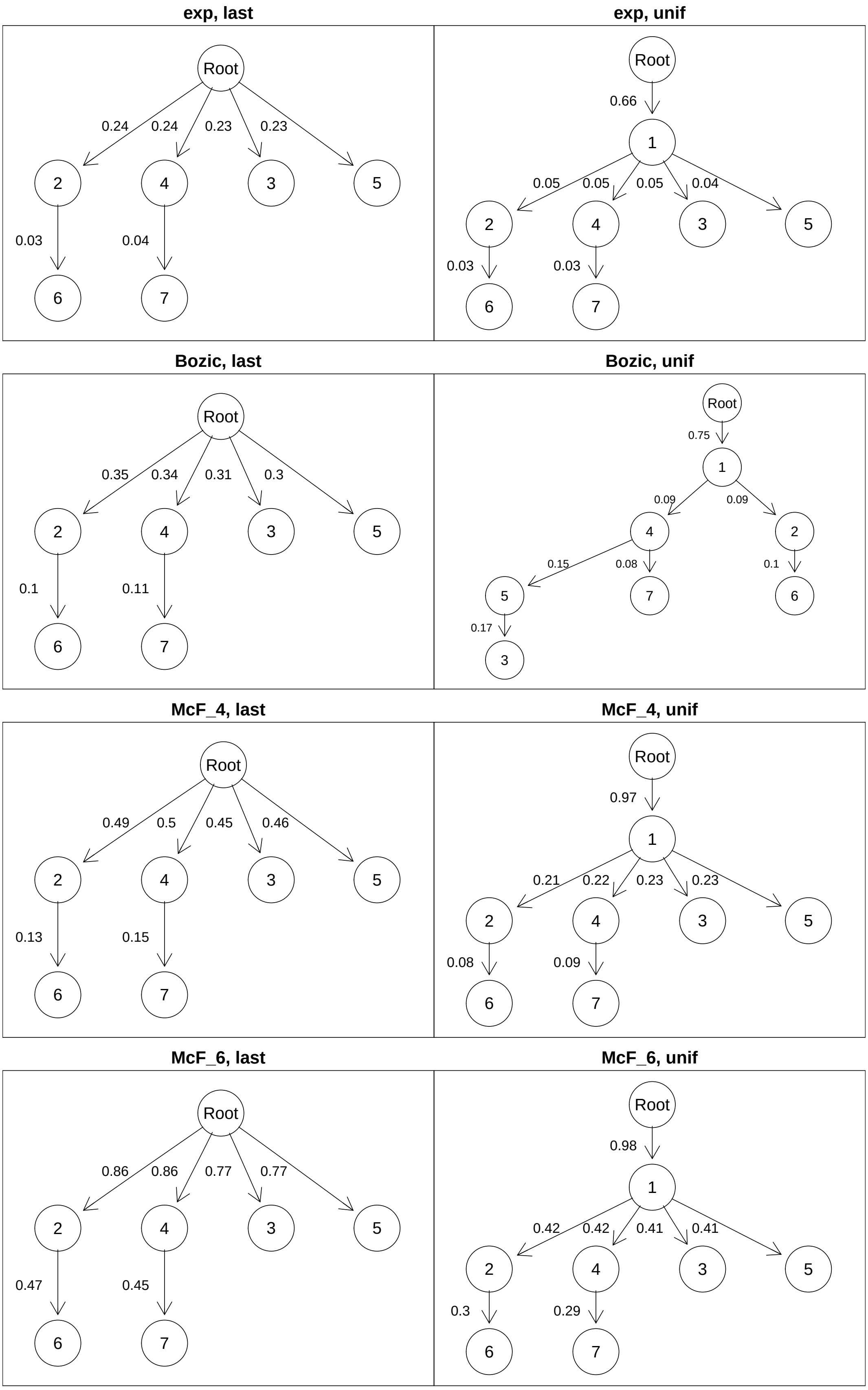
15.3 S. Type = single cell with sample size of 26000



Supplementary Figure 29: Fitted oncogenetic trees for 11-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for single cell sampling, sh = Inf, S. Size = 26000, for tree 11-B.



Supplementary Figure 30: Fitted oncogenetic trees for 9-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for single cell sampling, sh = Inf, S. Size = 26000, for tree 9-B.



Supplementary Figure 31: Fitted oncogenetic trees for 7-B. Randomly selected examples of trees reconstructed with method OT, including the estimated transition probabilities, for single cell sampling, sh = Inf, S. Size = 26000, for tree 7-B. This figure also illustrates that under S. Time = last, the first node is often missing with OT.

16 Summary results: heatmap figures/tables

The following figures show, for all metrics, as well as for the number of edges in the transitive closure of the relations (i.e., the # of relations in F for metric PFD), the median values for all combinations of method (and filtering, if applicable), sample size, sample type, and evolutionary model. Each cell is the median of 20 replicates.

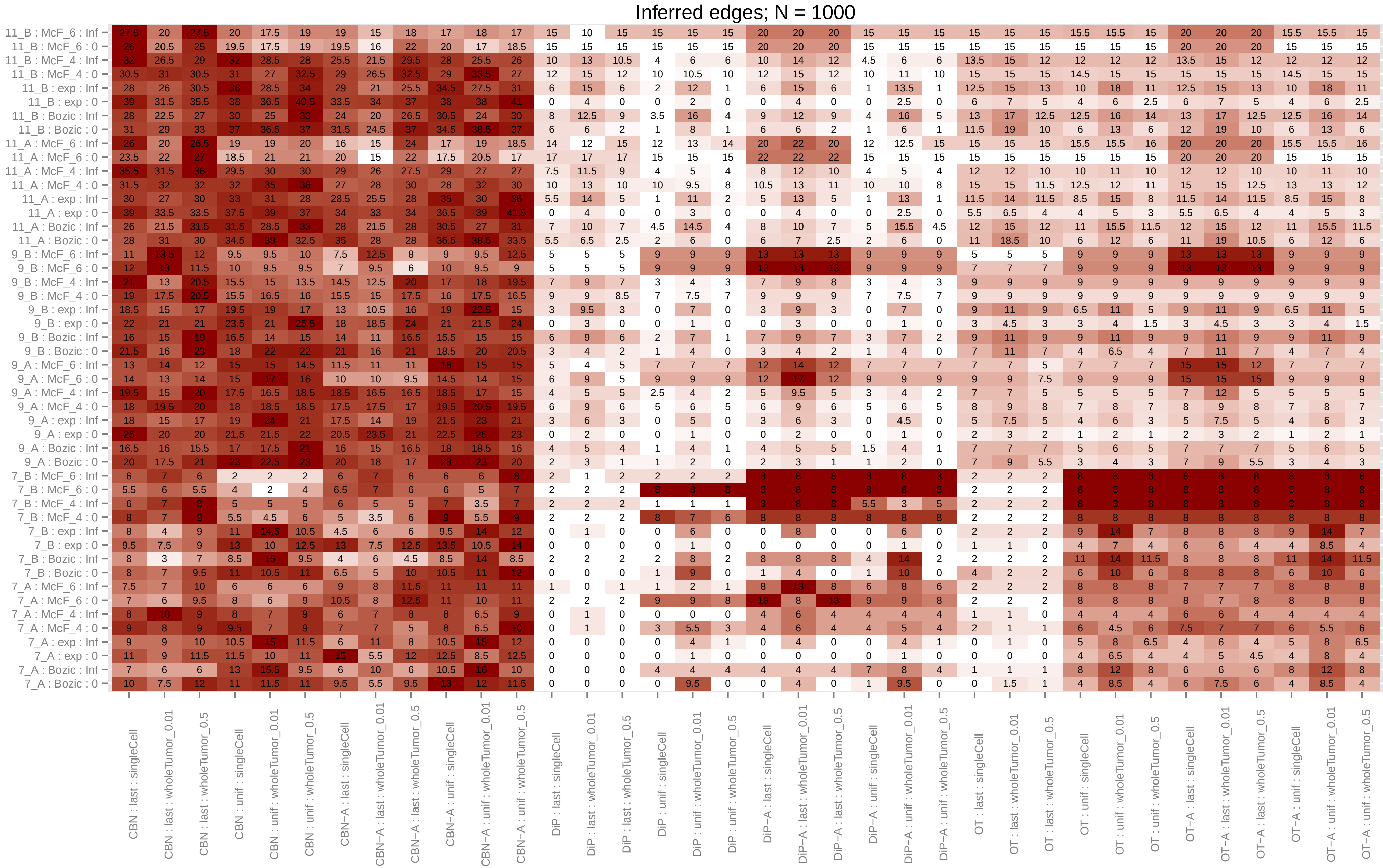
For all figures, lighter colors denote smaller values, and color intensity is normalized by row (i.e., there will be at least one cell that is white and one cell that is dark red in each row). Grey cells denote missing values: i.e., all 20 values for that cell were missing. Missing values can only occur in PFD (since, even if there are no fits, the rest of the metrics are defined).

For performance metrics (Diff, PFD, PND, FPF), therefore, lighter colors denote better performance. For "Inferred edges", lighter colors highlight those cases with few discoveries.

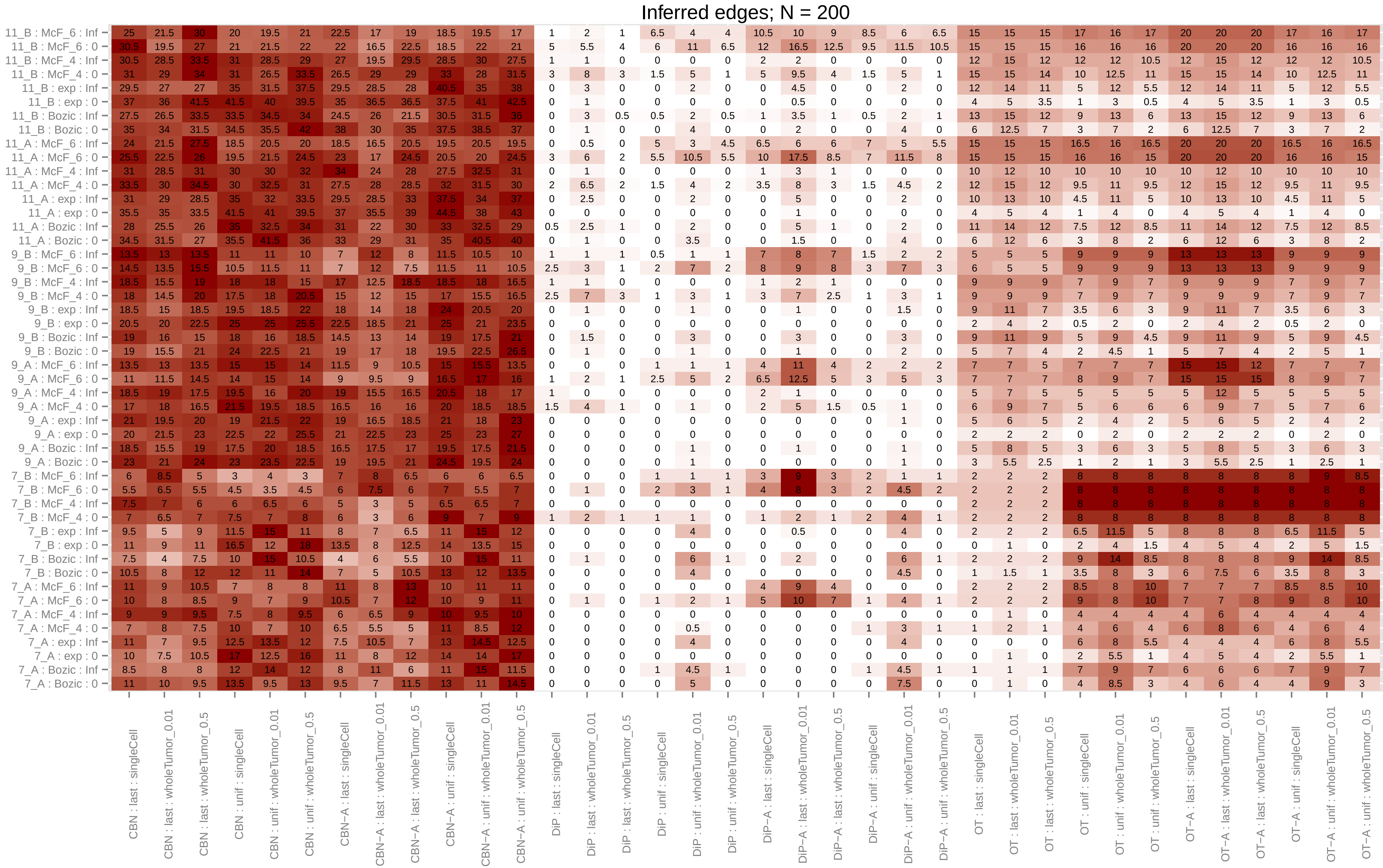
The figures for the Drivers Unknown had to be split into two, for readability: the first half is with S.Time = last and the second with S.Time = unif (this is shown in the figure). Please note that the color intensity is normalized by row **over the two figures**.

16.1 Drivers Known

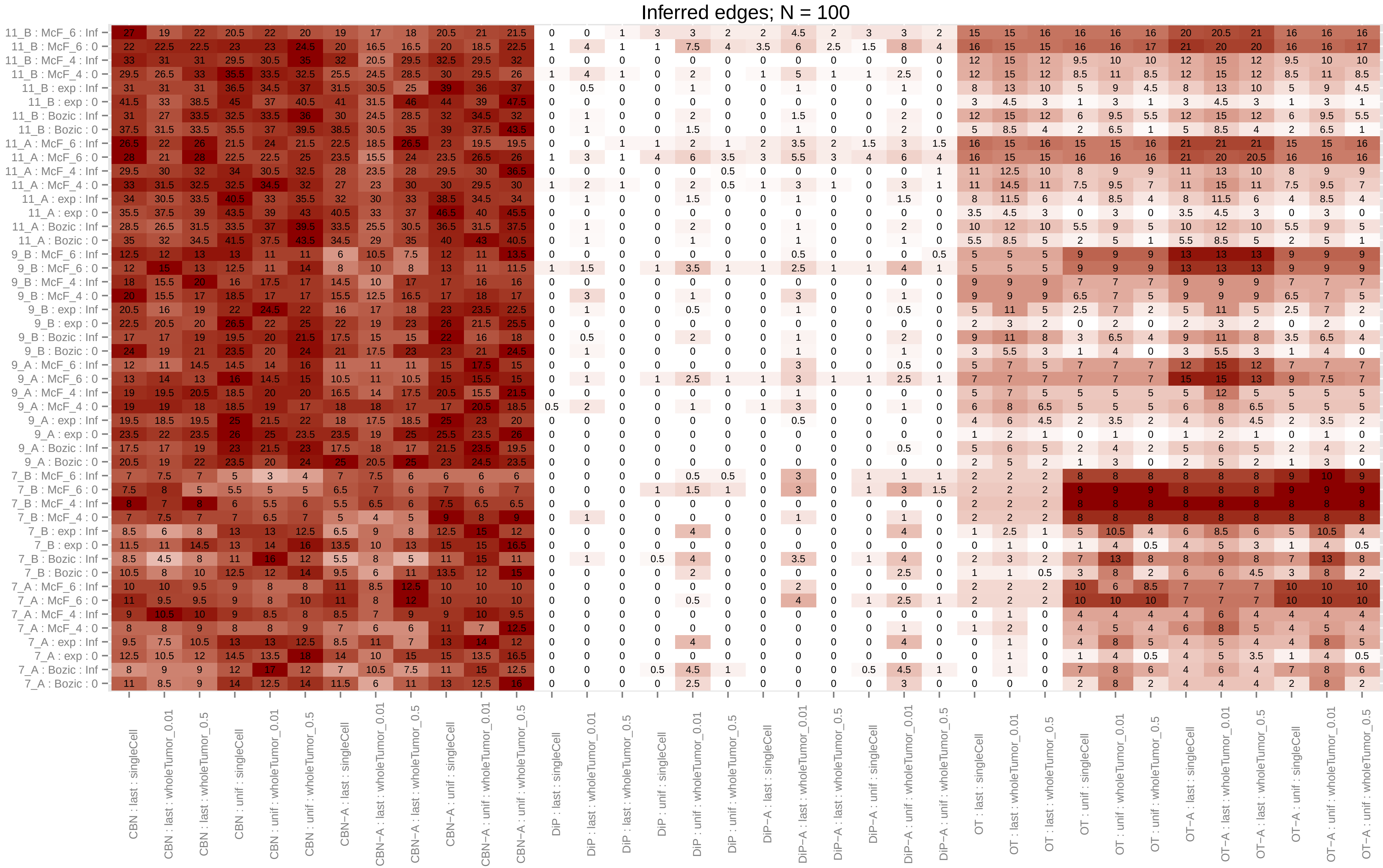
16.1.1 Inferred edges, Drivers Known



Supplementary Figure 32: Drivers Known, number of inferred edges (not counting those from Root), N = 1000

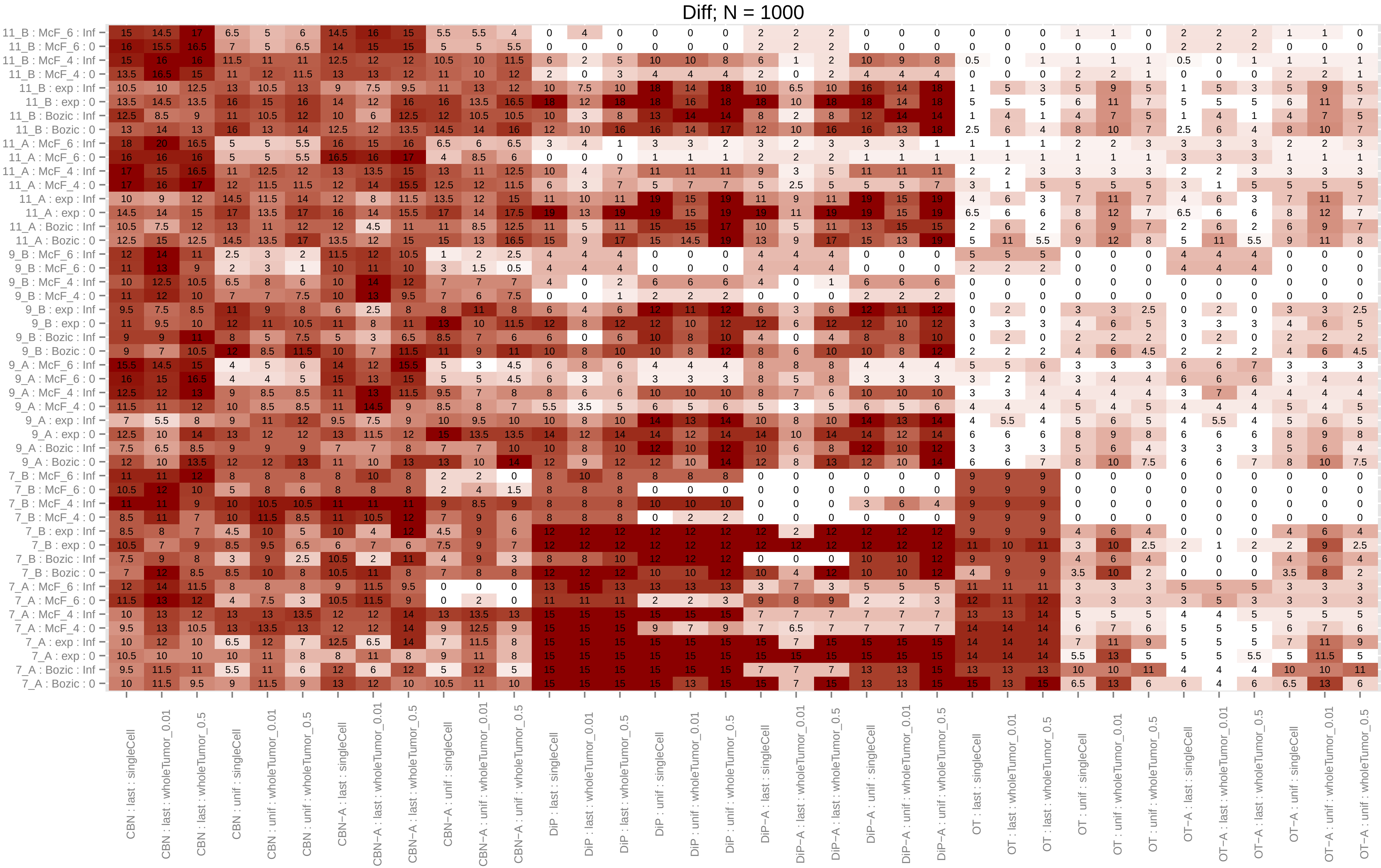


Supplementary Figure 33: Drivers Known, number of inferred edges (not counting those from Root), N = 200

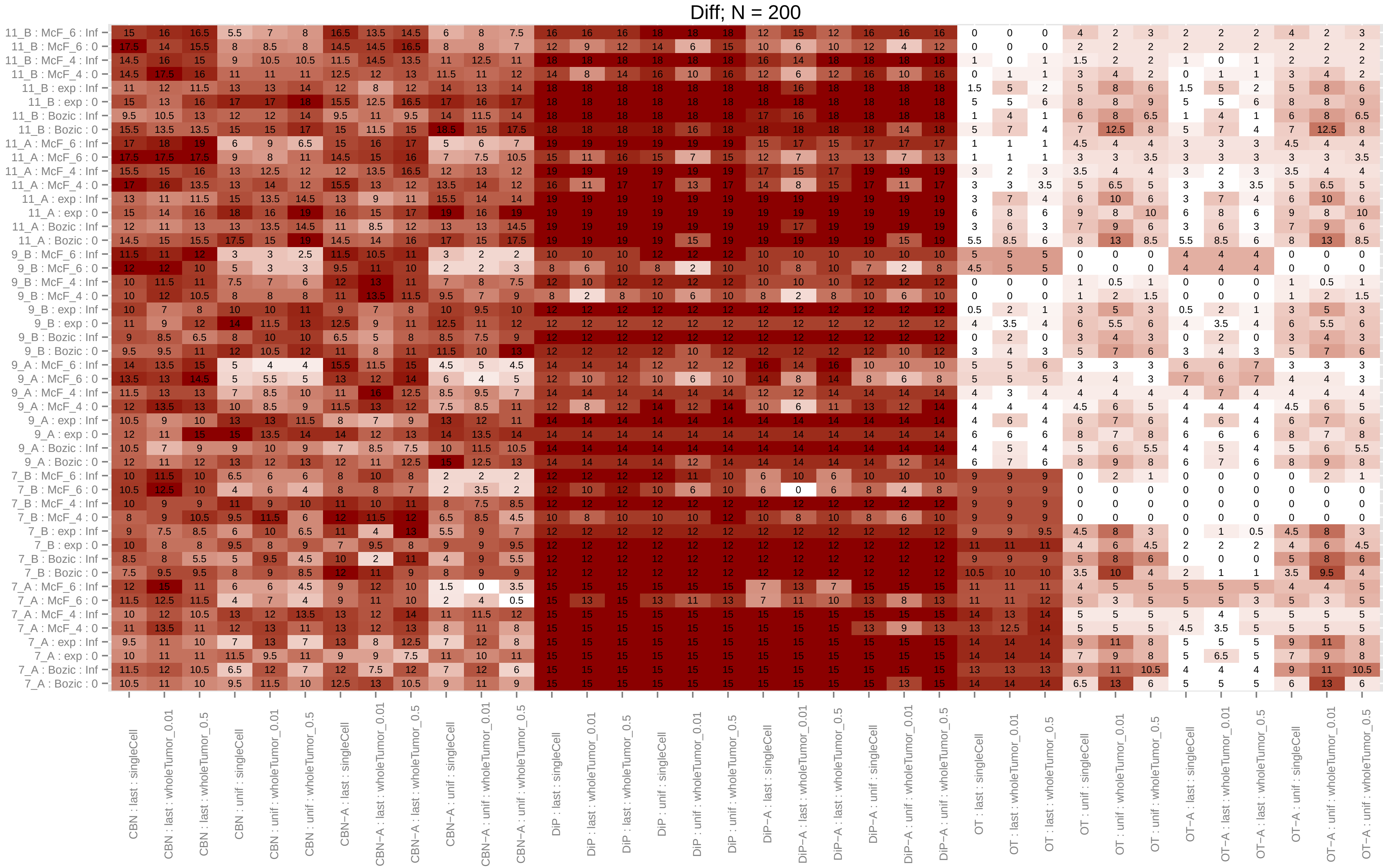


Supplementary Figure 34: Drivers Known, number of inferred edges (not counting those from Root), N = 100

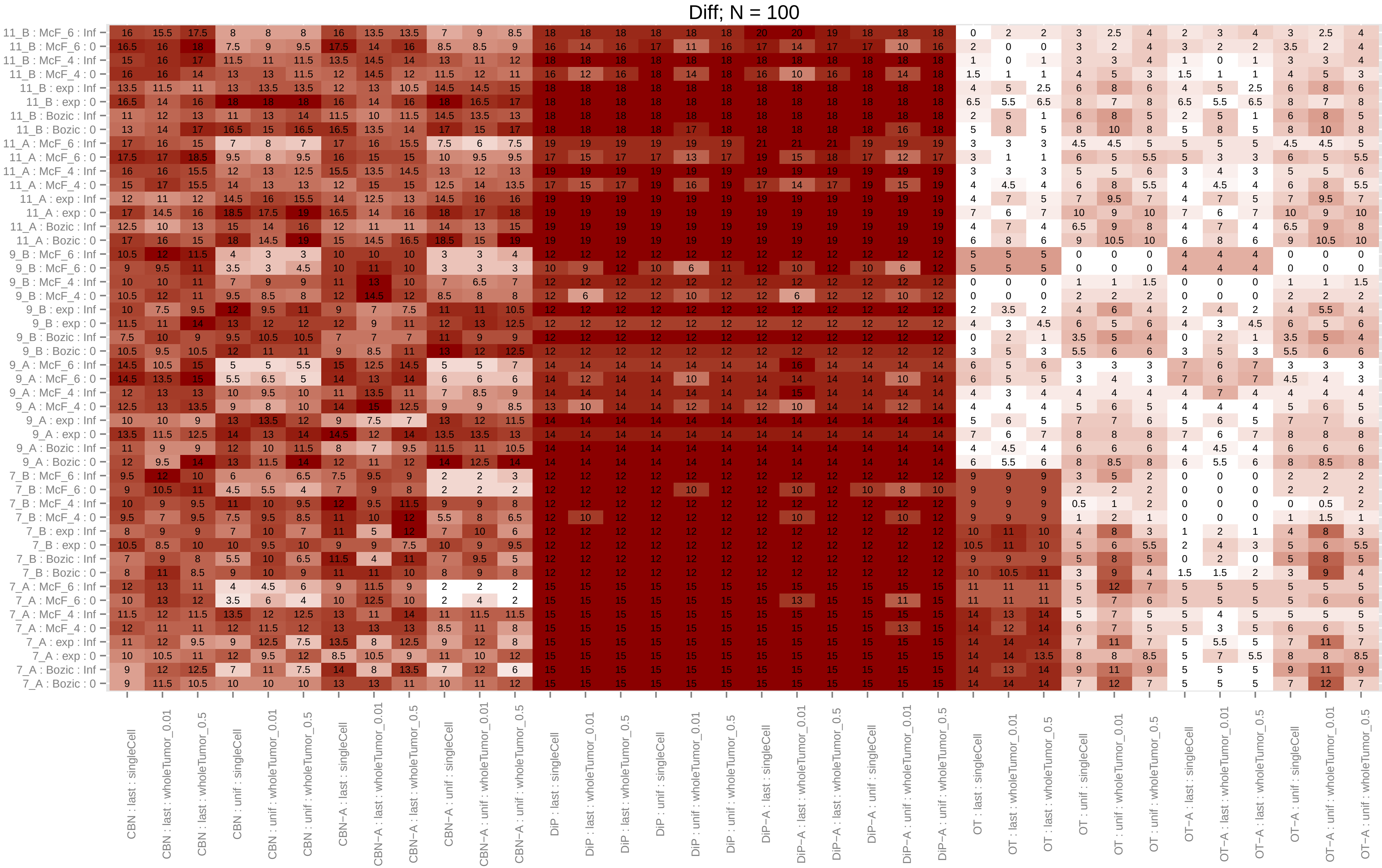
16.1.2 Diff, Drivers Known



Supplementary Figure 35: Drivers Known, Diff, N = 1000

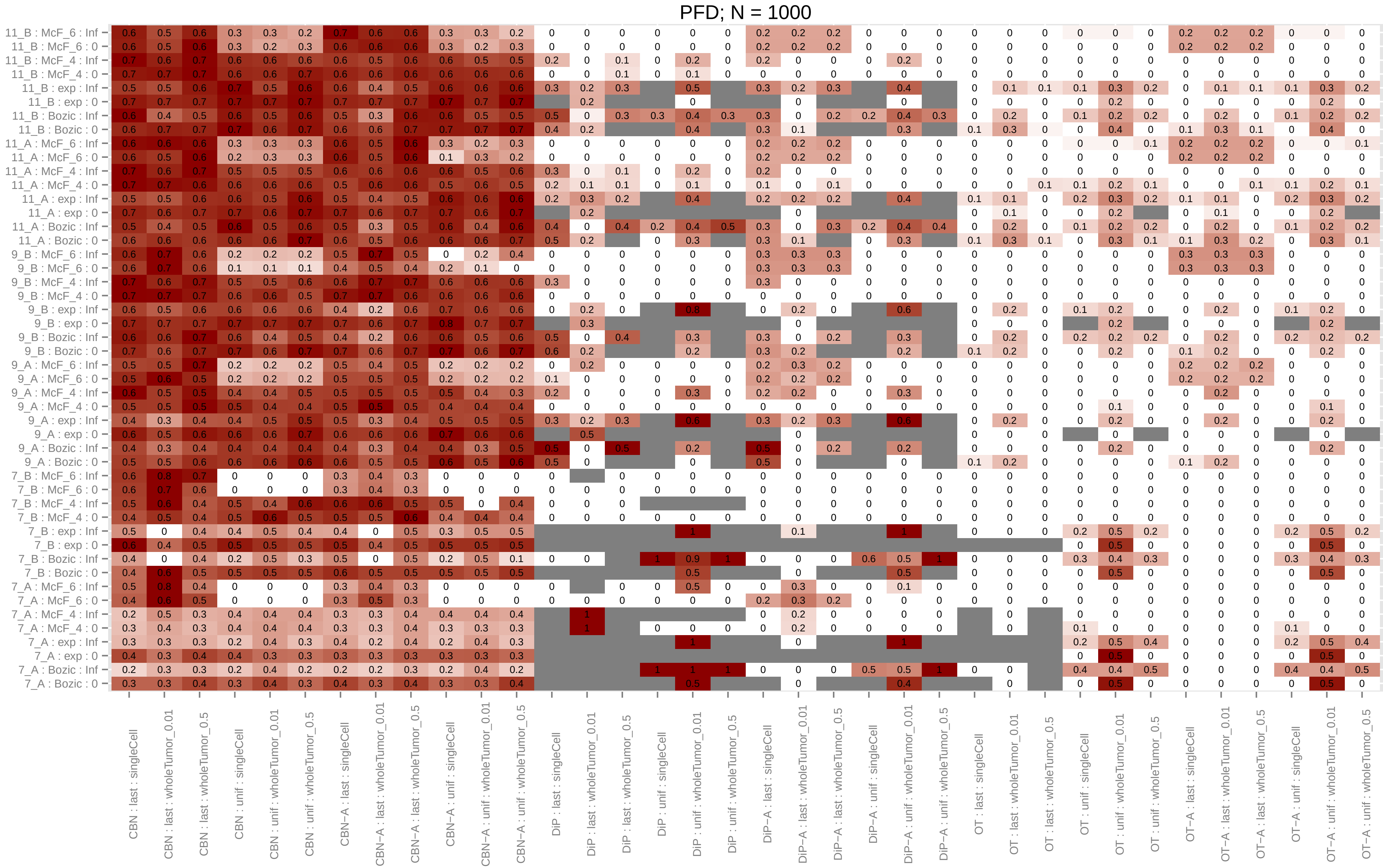


Supplementary Figure 36: Drivers Known, Diff, N = 200

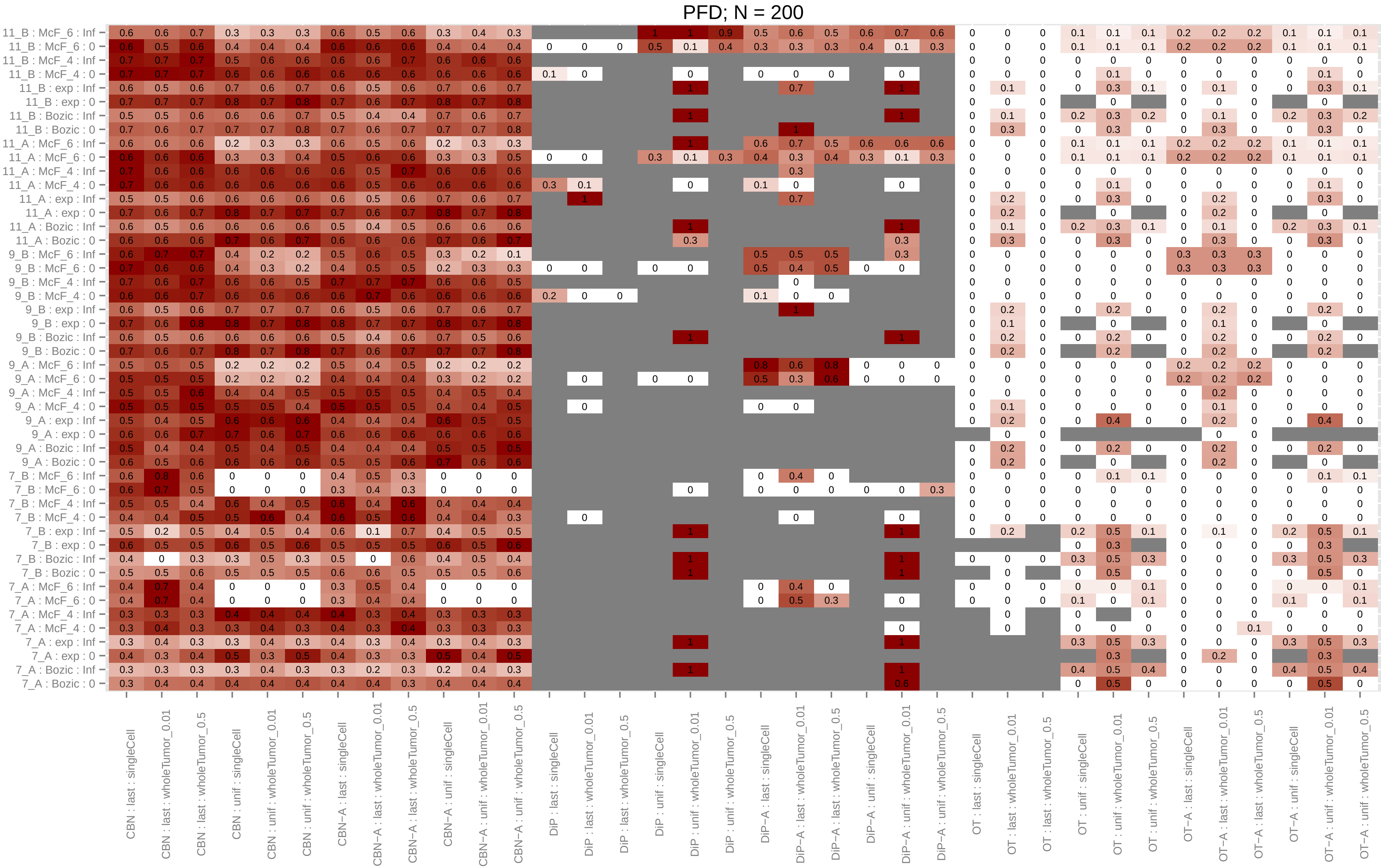


Supplementary Figure 37: Drivers Known, Diff, N = 100

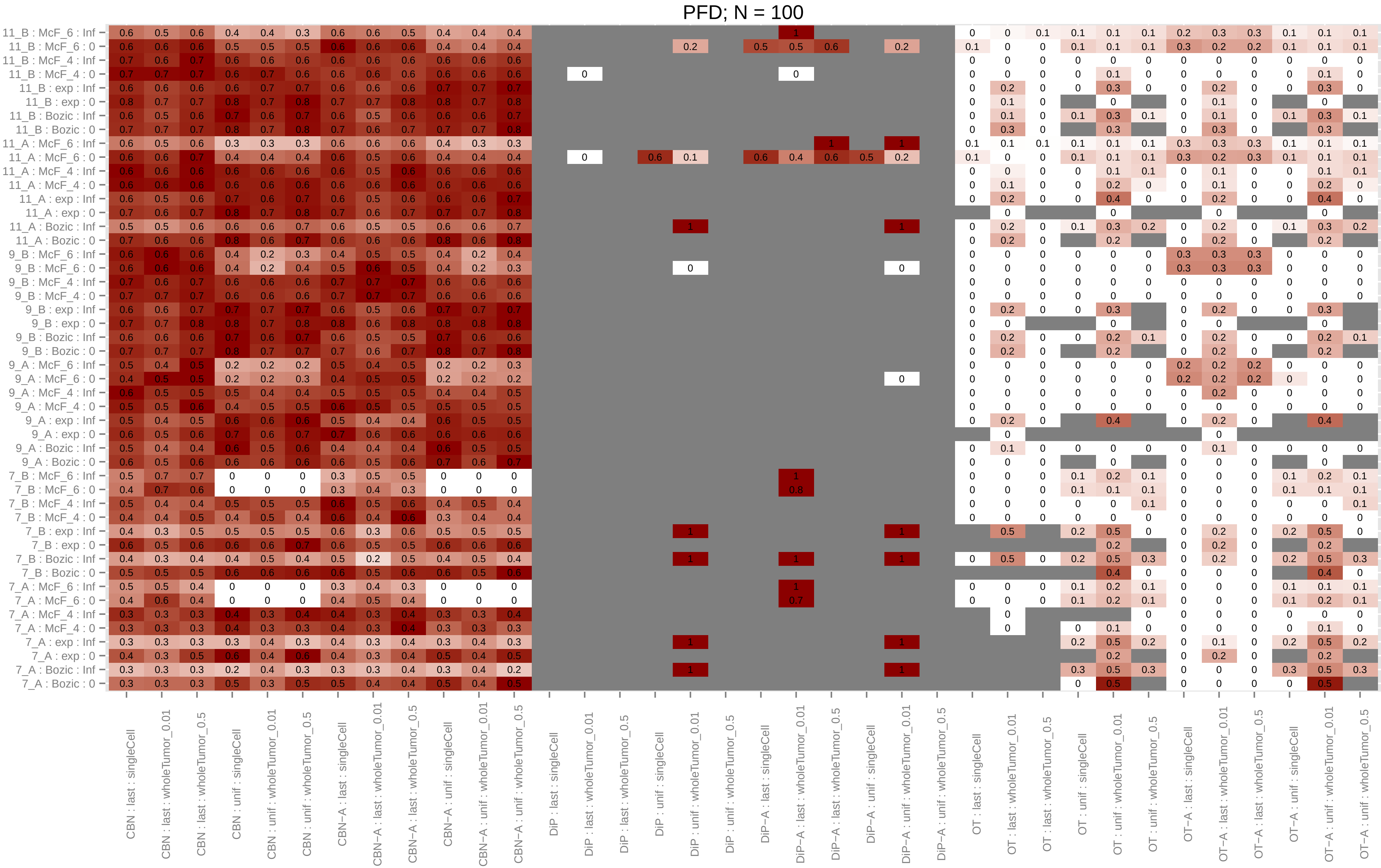
16.1.3 PFD, Drivers Known



Supplementary Figure 38: Drivers Known, PFD, N = 1000

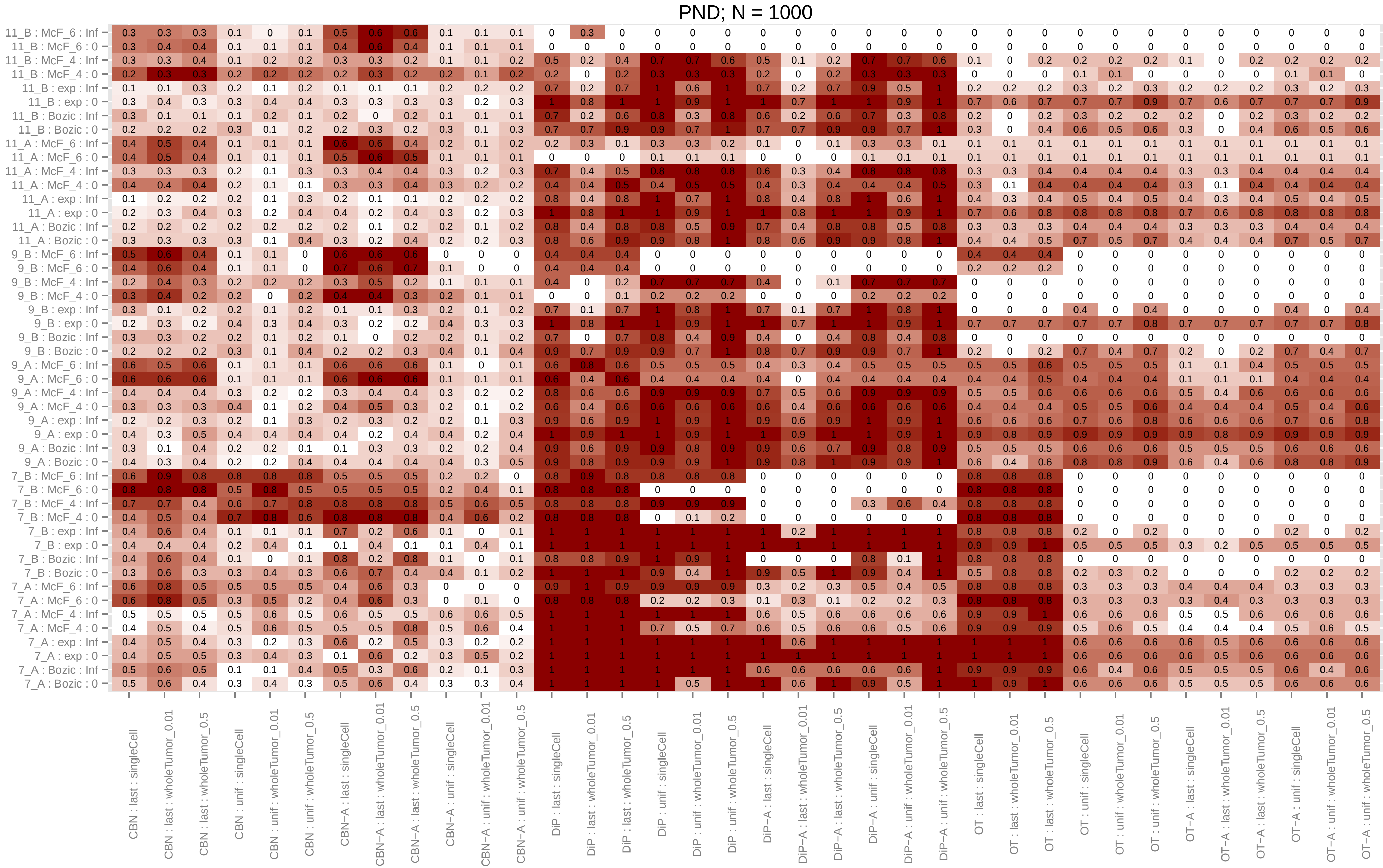


Supplementary Figure 39: Drivers Known, PFD, N = 200

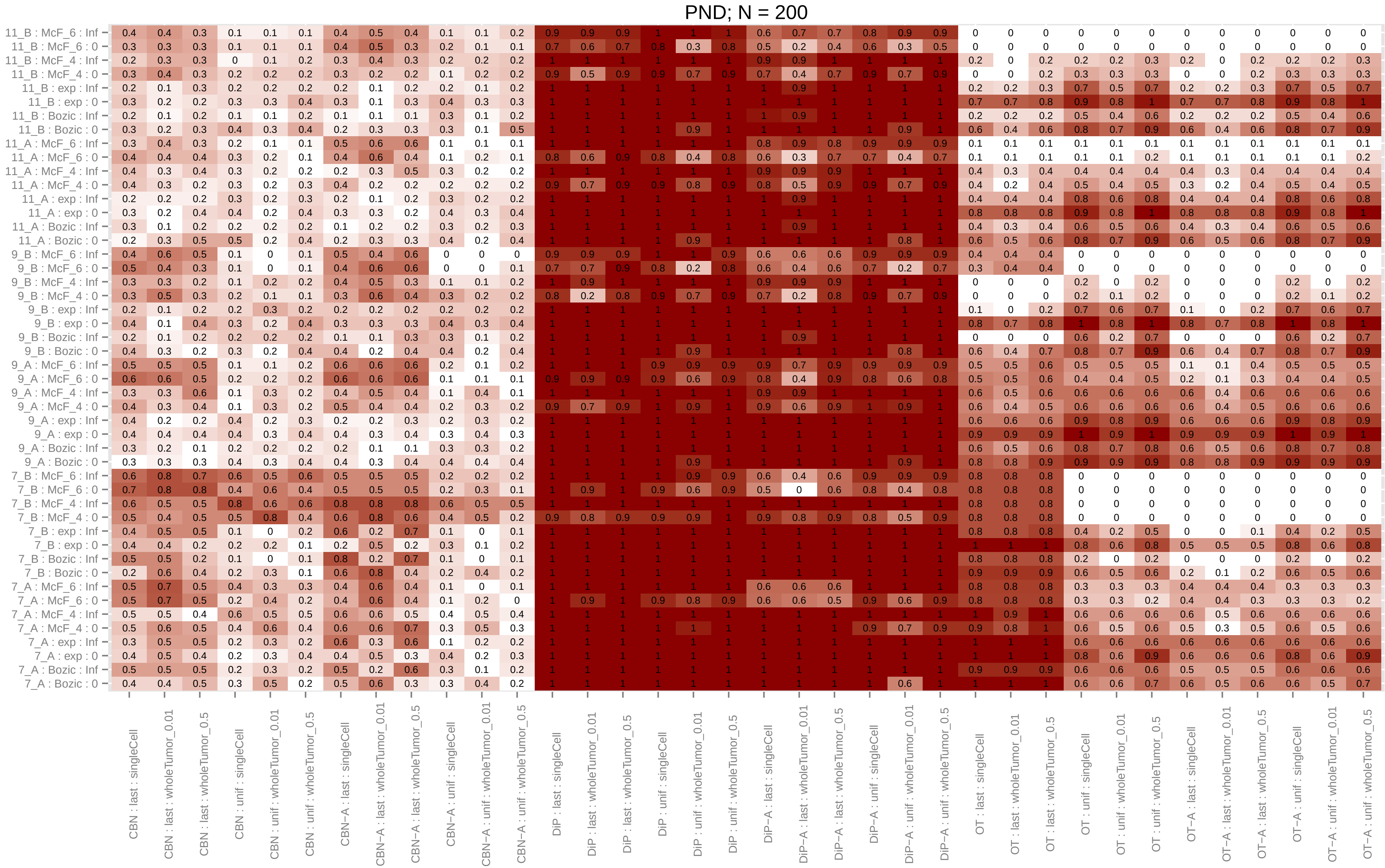


Supplementary Figure 40: Drivers Known, PFD, N = 100

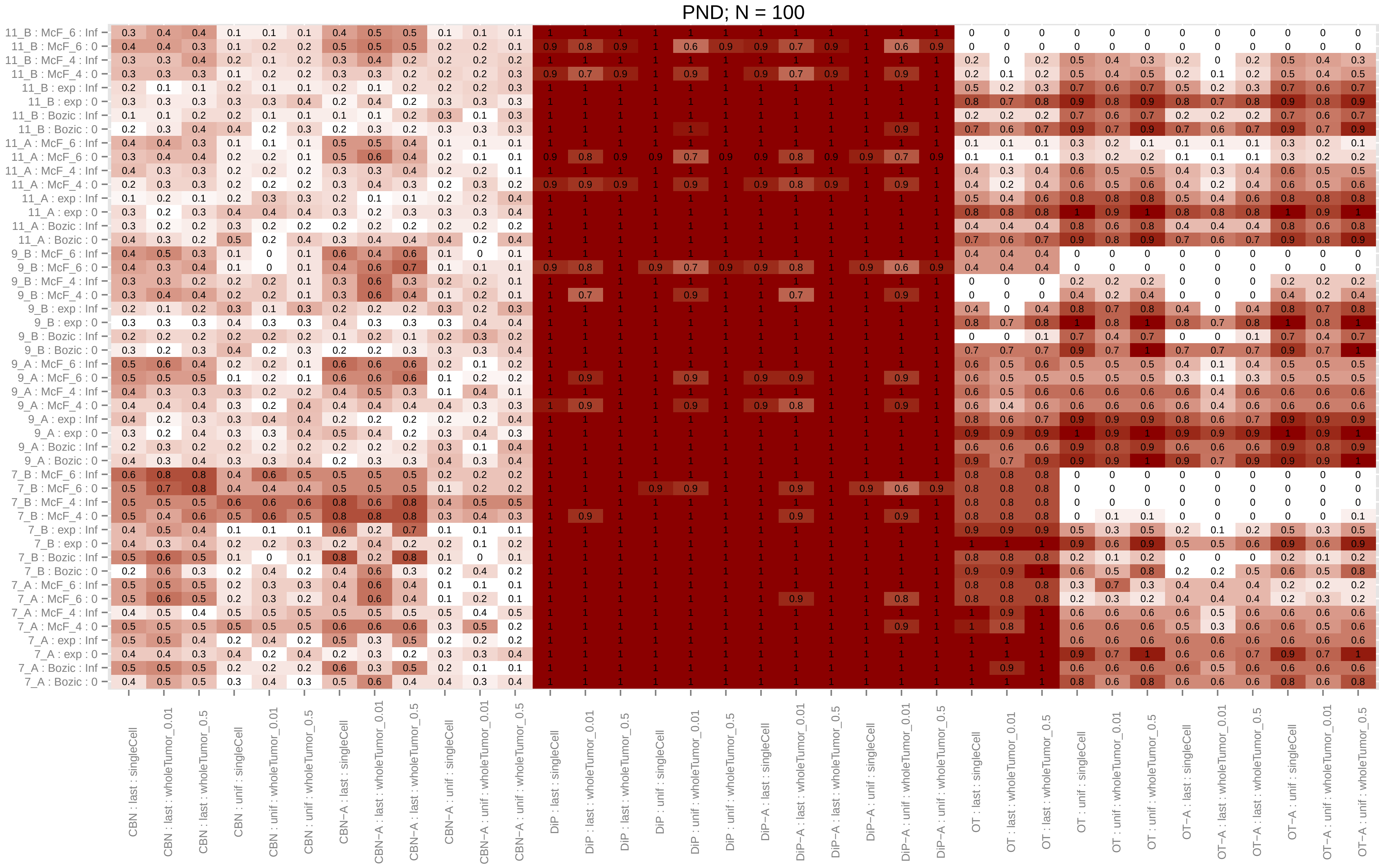
16.1.4 PND, Drivers Known



Supplementary Figure 41: Drivers Known, PND, N = 1000

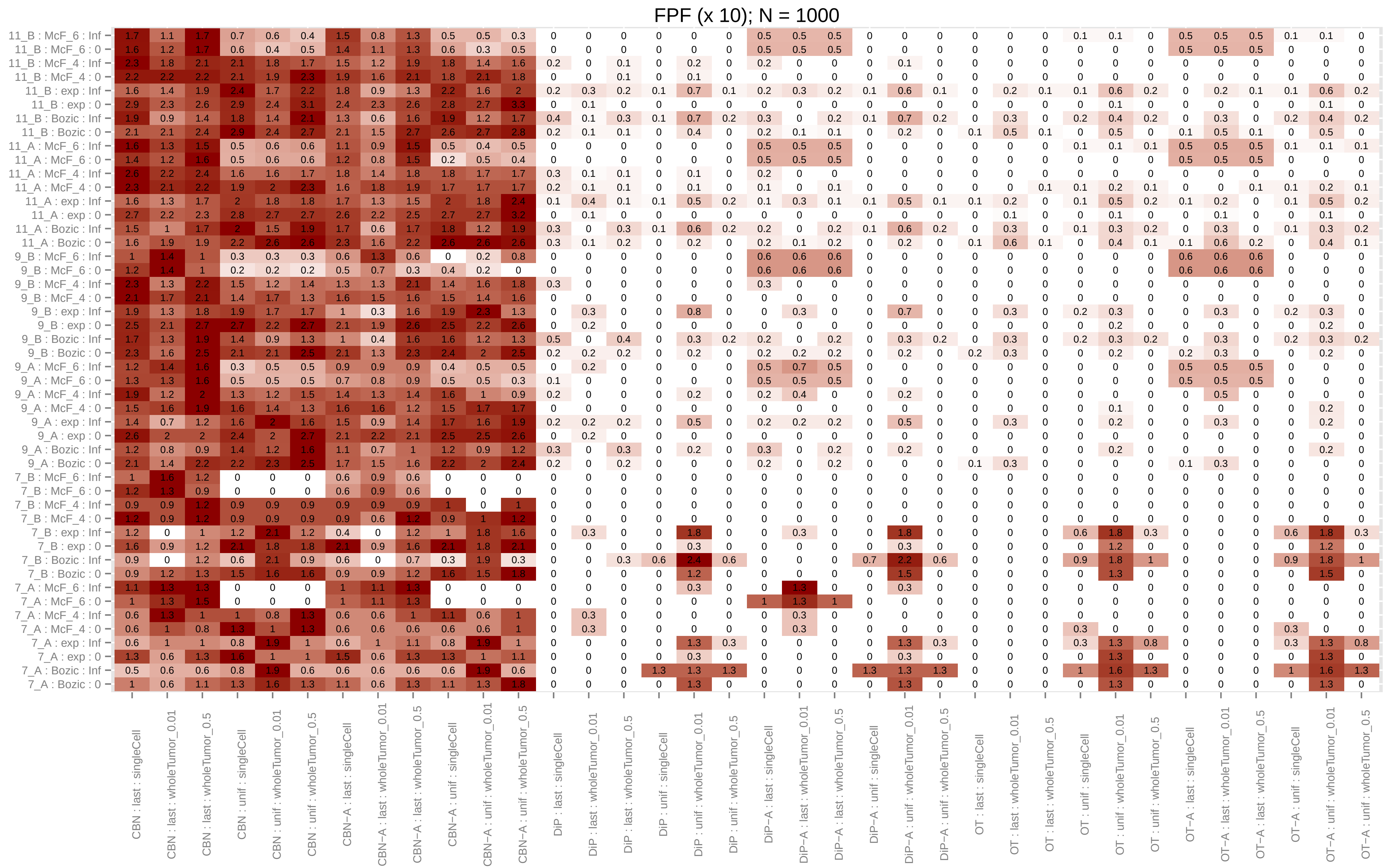


Supplementary Figure 42: Drivers Known, PND, N = 200

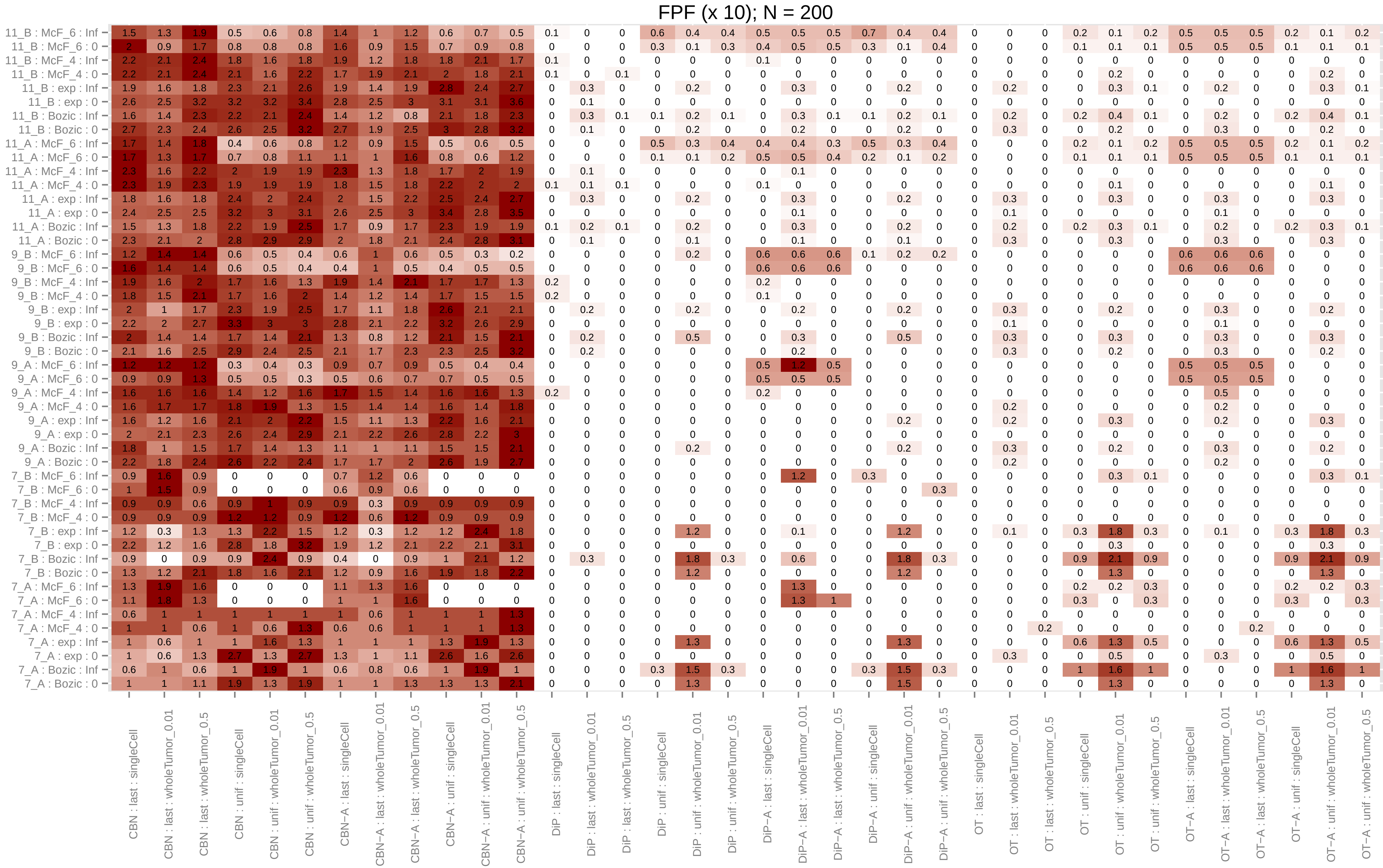


Supplementary Figure 43: Drivers Known, PND, N = 100

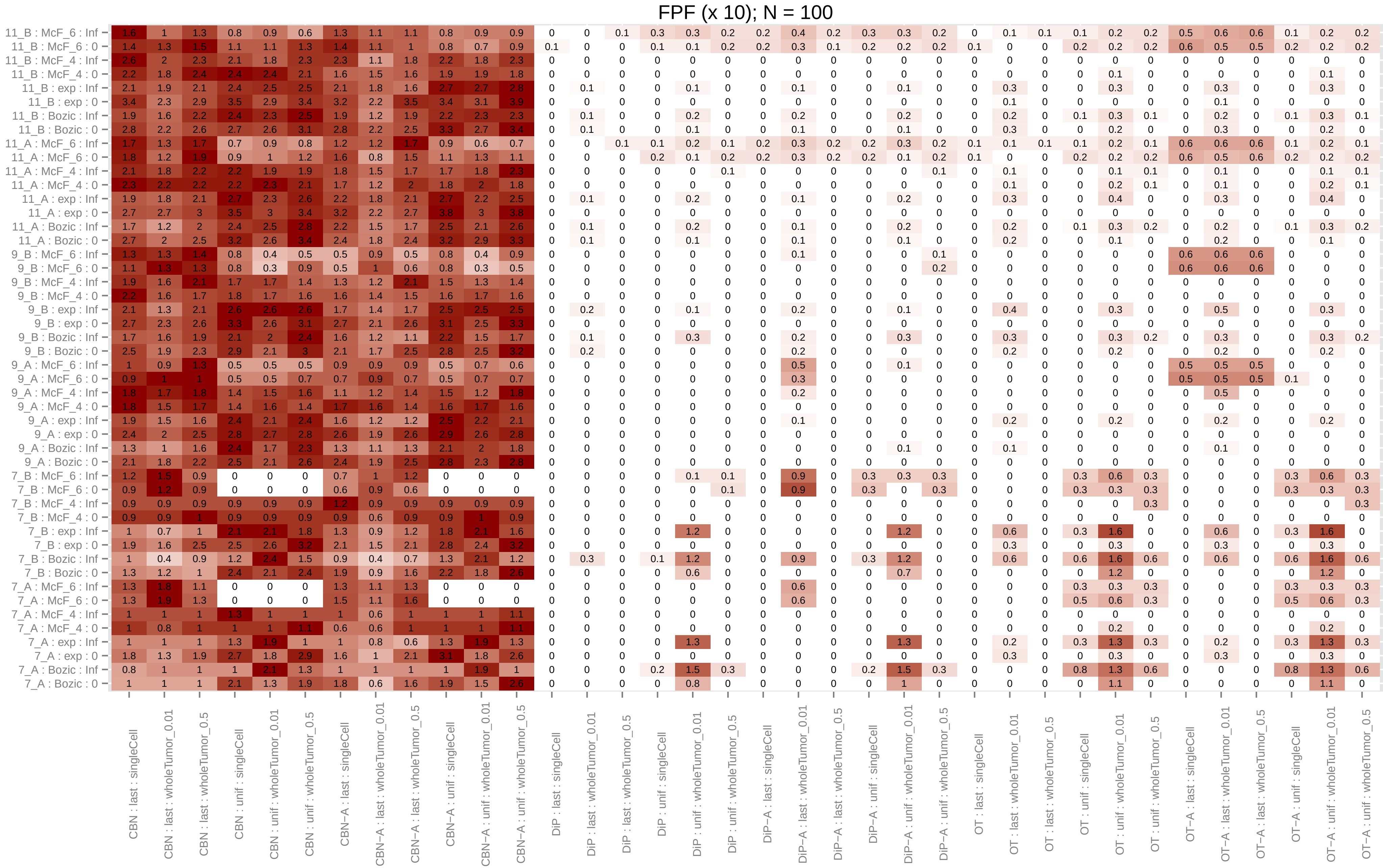
16.1.5 FPF, Drivers Known



Supplementary Figure 44: Drivers Known, FPF, N = 1000



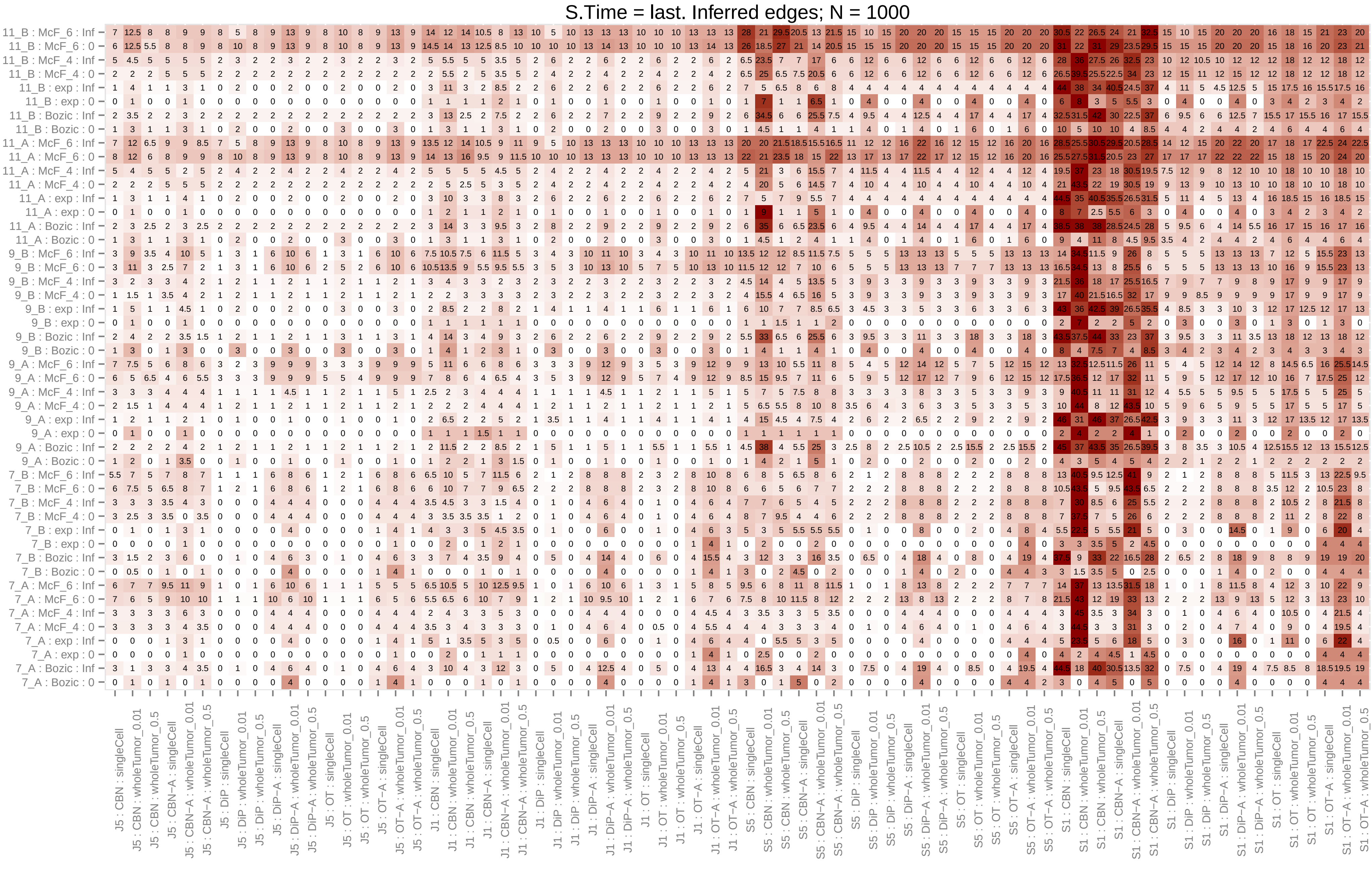
Supplementary Figure 45: Drivers Known, FPF, N = 200



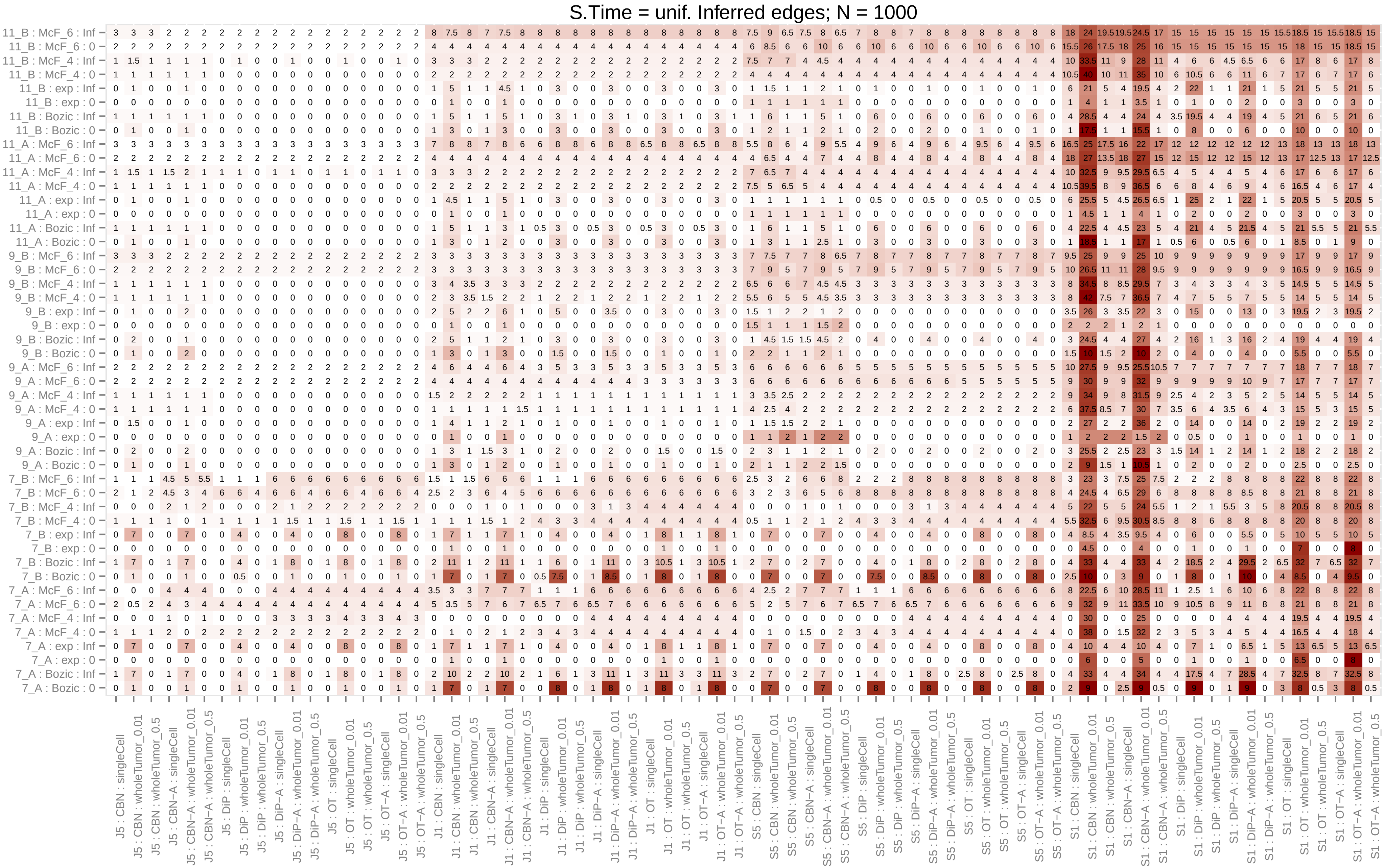
Supplementary Figure 46: Drivers Known, FPF, N = 100

16.2 Drivers Unknown

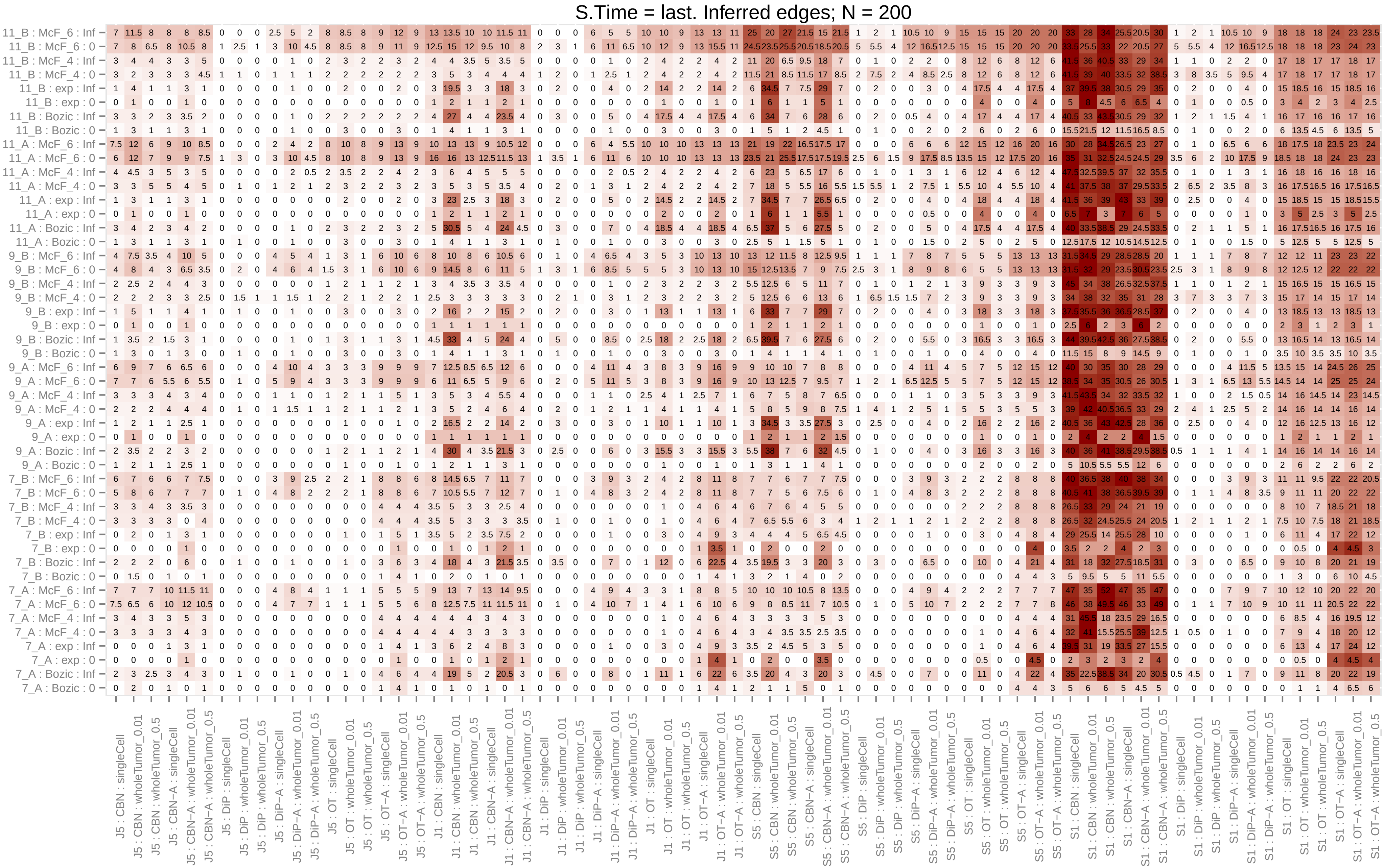
16.2.1 Inferred edges, Drivers Unknown



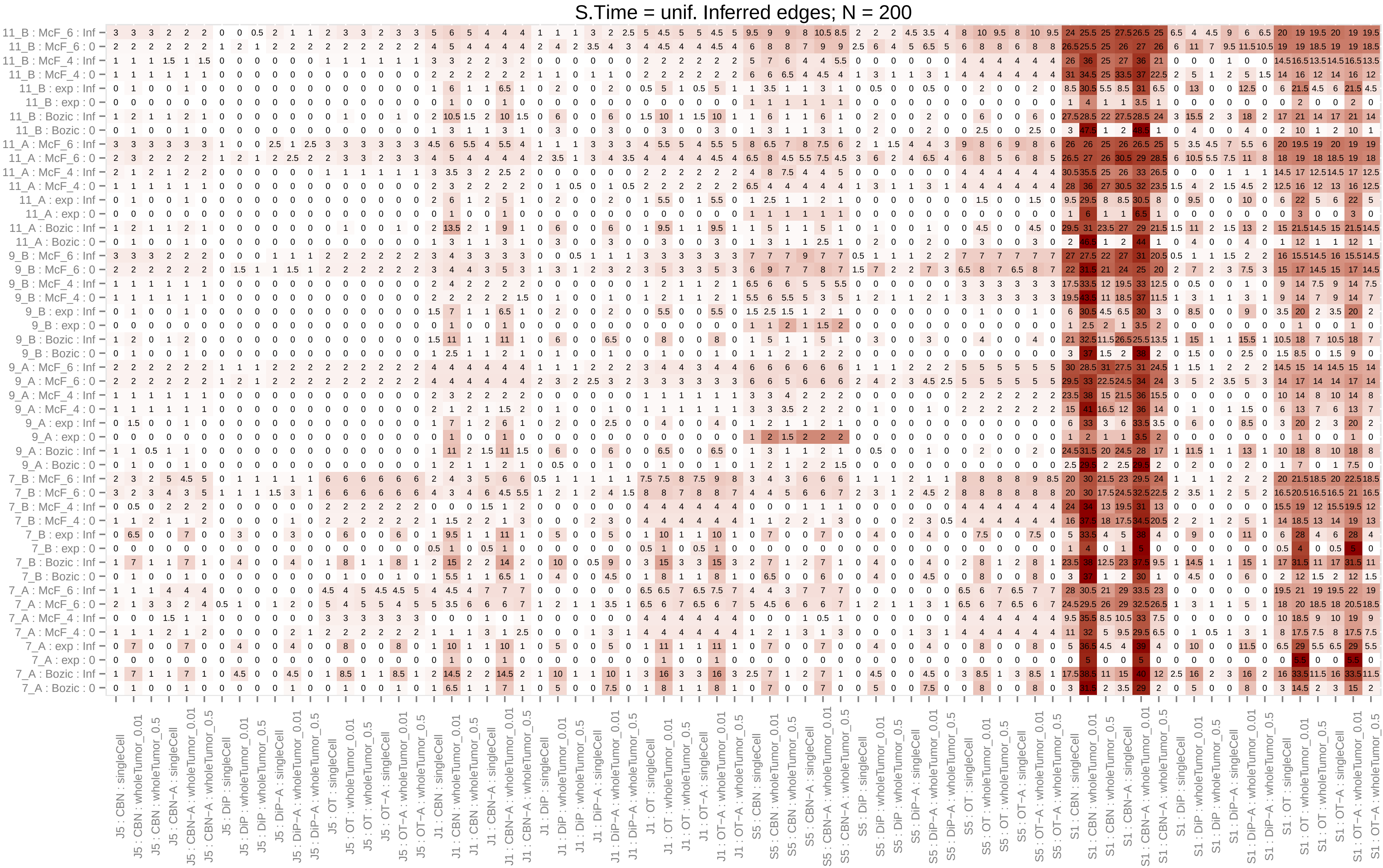
Supplementary Figure 47: Drivers Unknown, number of inferred edges (not counting those from Root), N = 1000, S.Time = last.



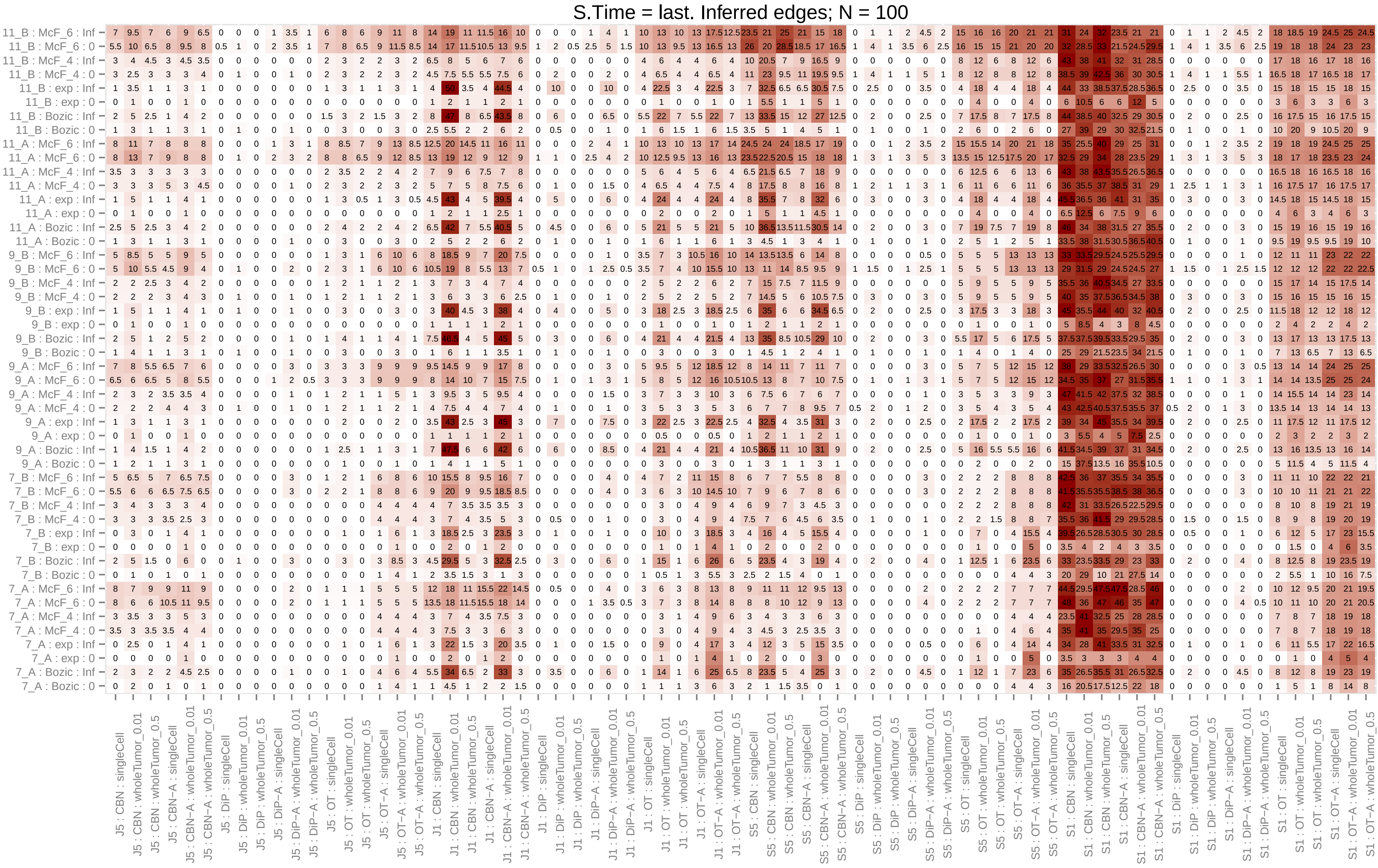
Supplementary Figure 48: Drivers Unknown, number of inferred edges (not counting those from Root), N = 1000, S.Time = unif.



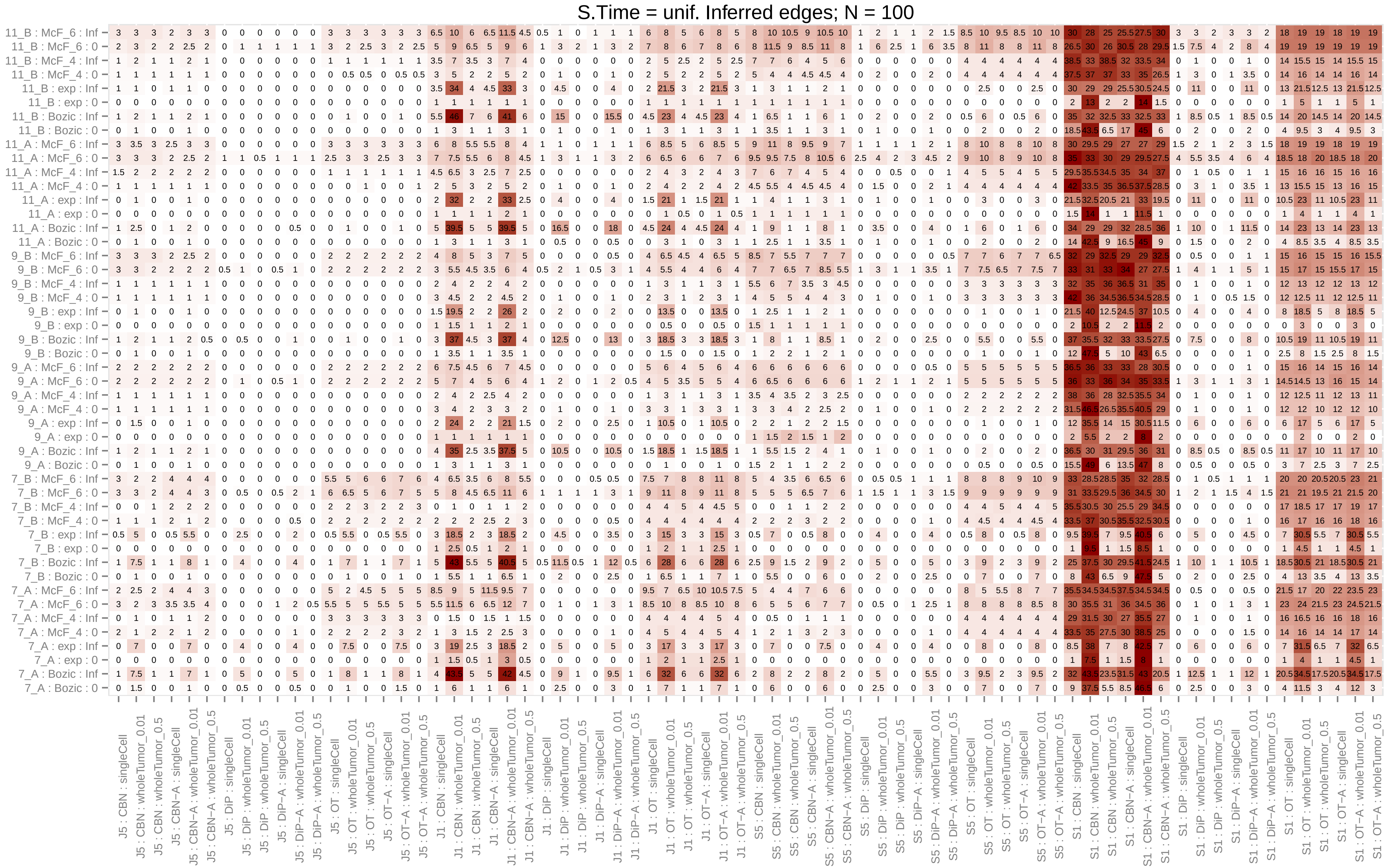
Supplementary Figure 49: Drivers Unknown, number of inferred edges (not counting those from Root), N = 200, S.Time = last



Supplementary Figure 50: Drivers Unknown, number of inferred edges (not counting those from Root), N = 200, S.Time = unif.

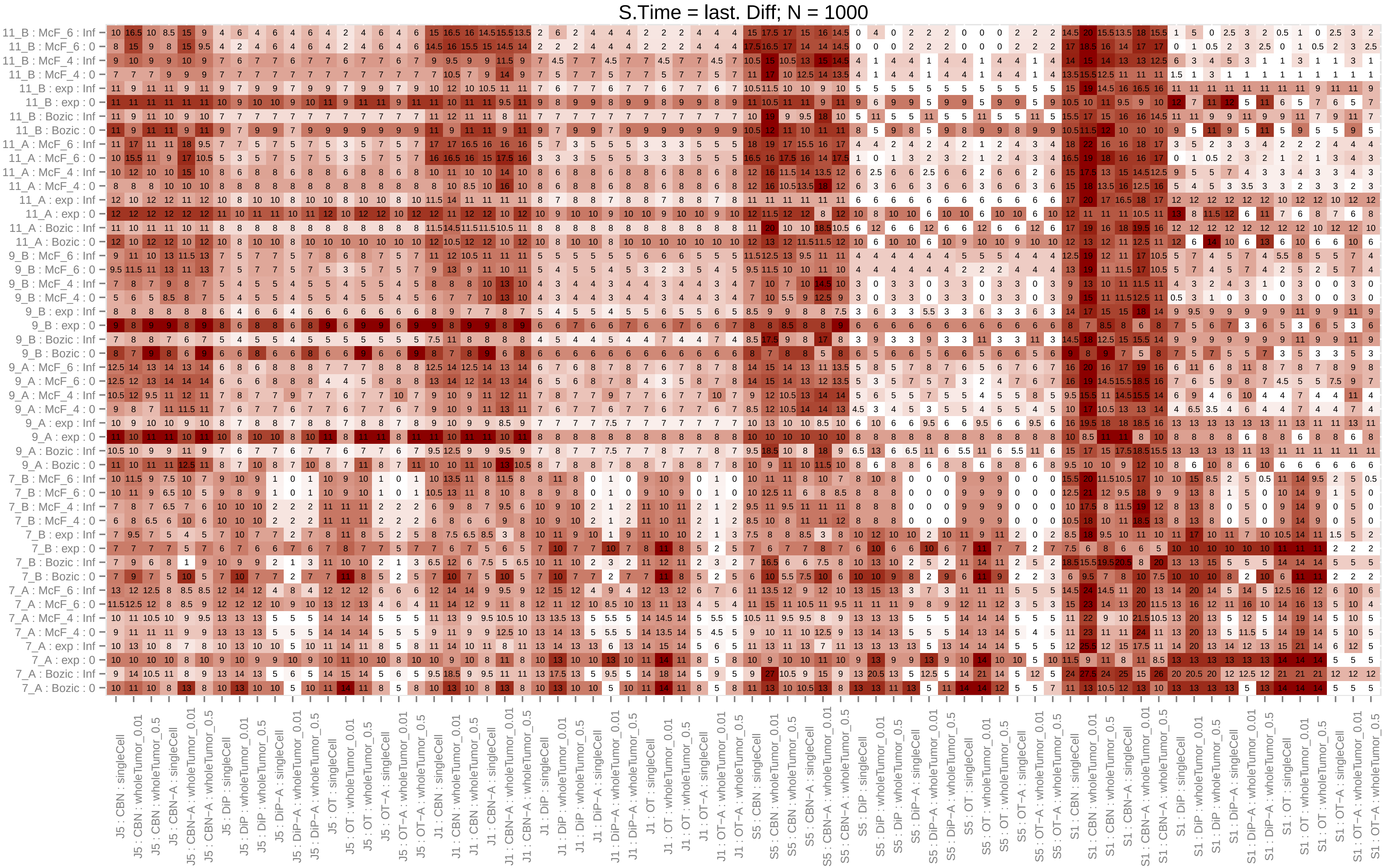


Supplementary Figure 51: Drivers Unknown, number of inferred edges (not counting those from Root), N = 100, S.Time = last

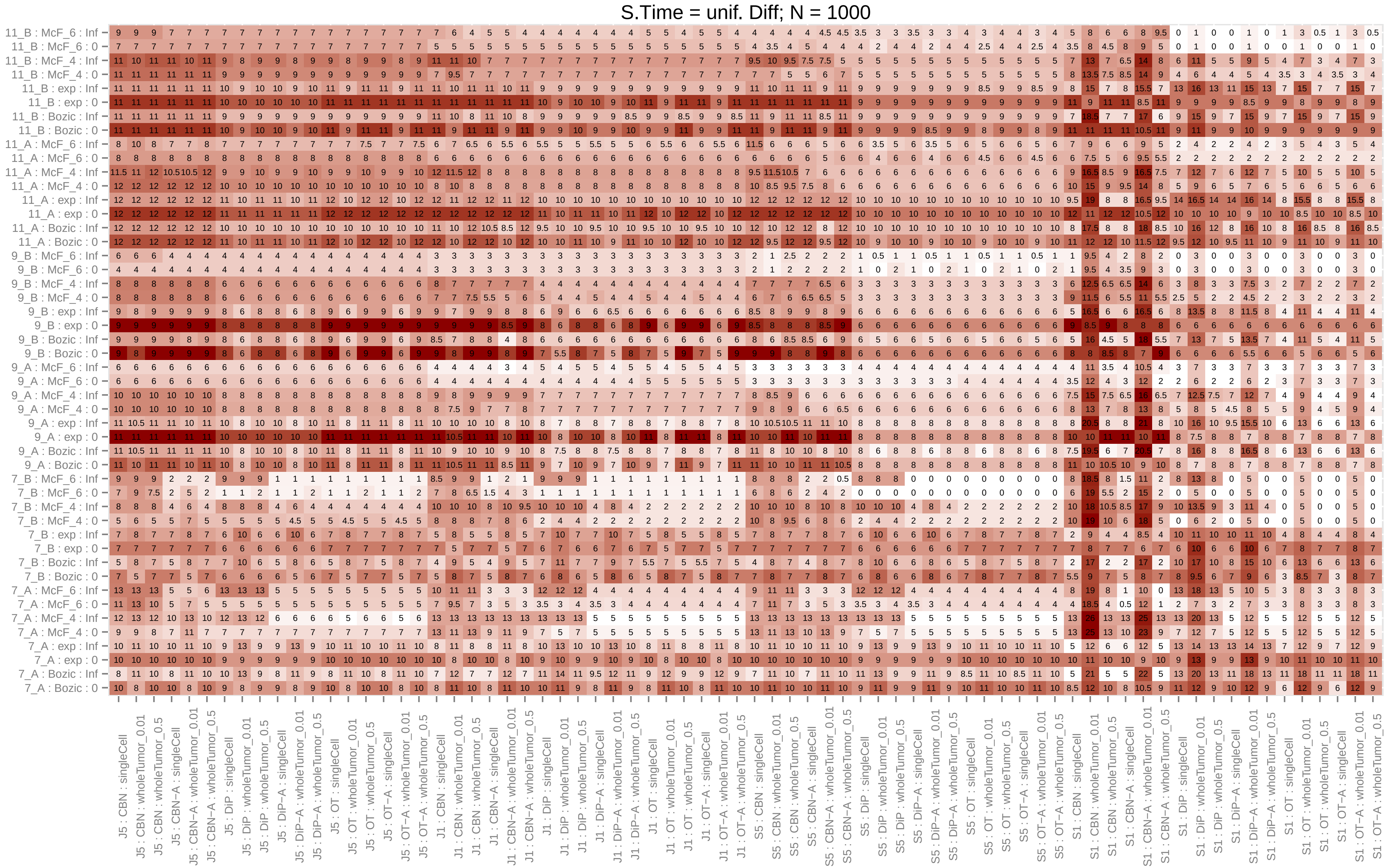


Supplementary Figure 52: Drivers Unknown, number of inferred edges (not counting those from Root), N = 100, S.Time = unif.

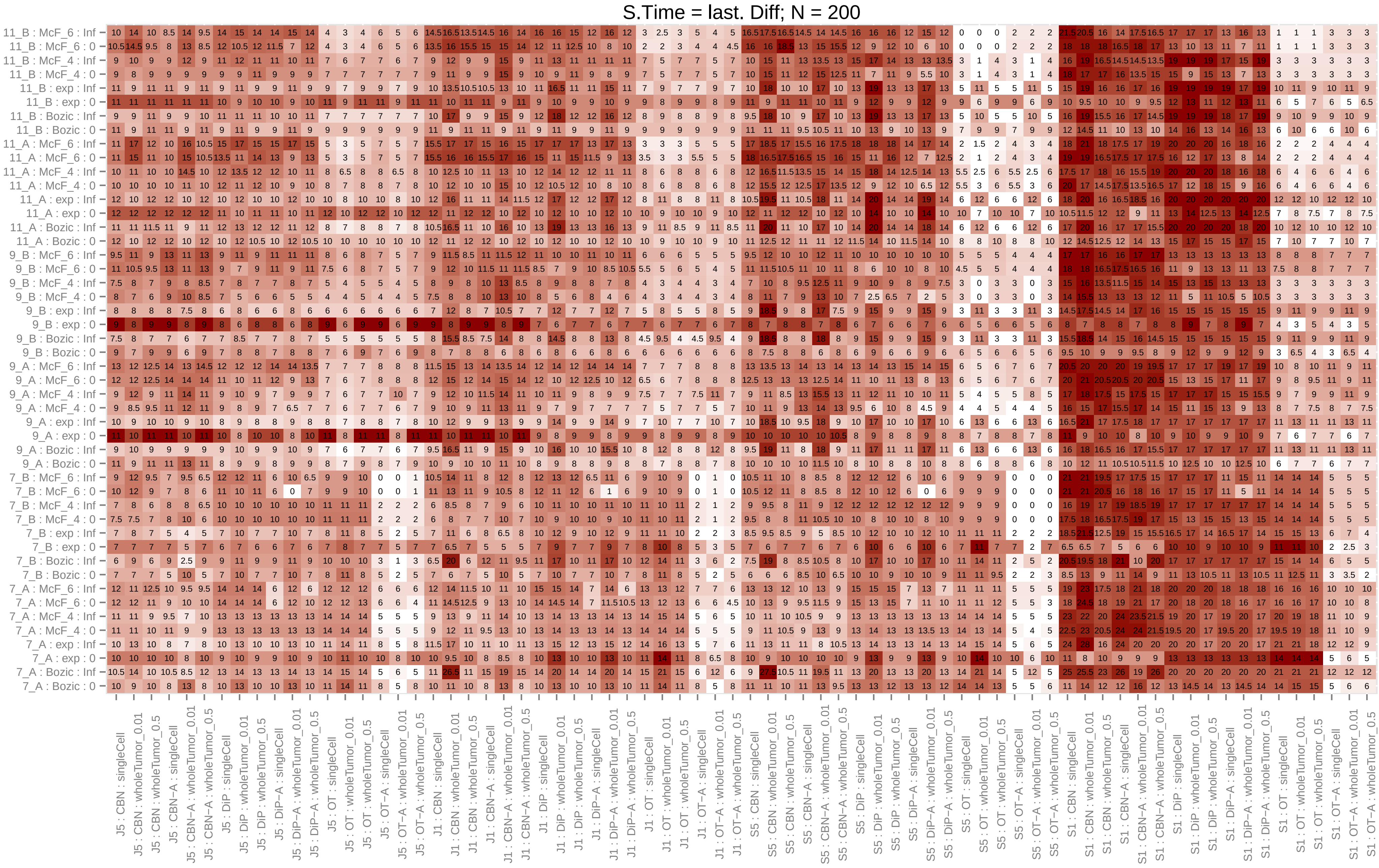
16.2.2 Diff, Drivers Unknown



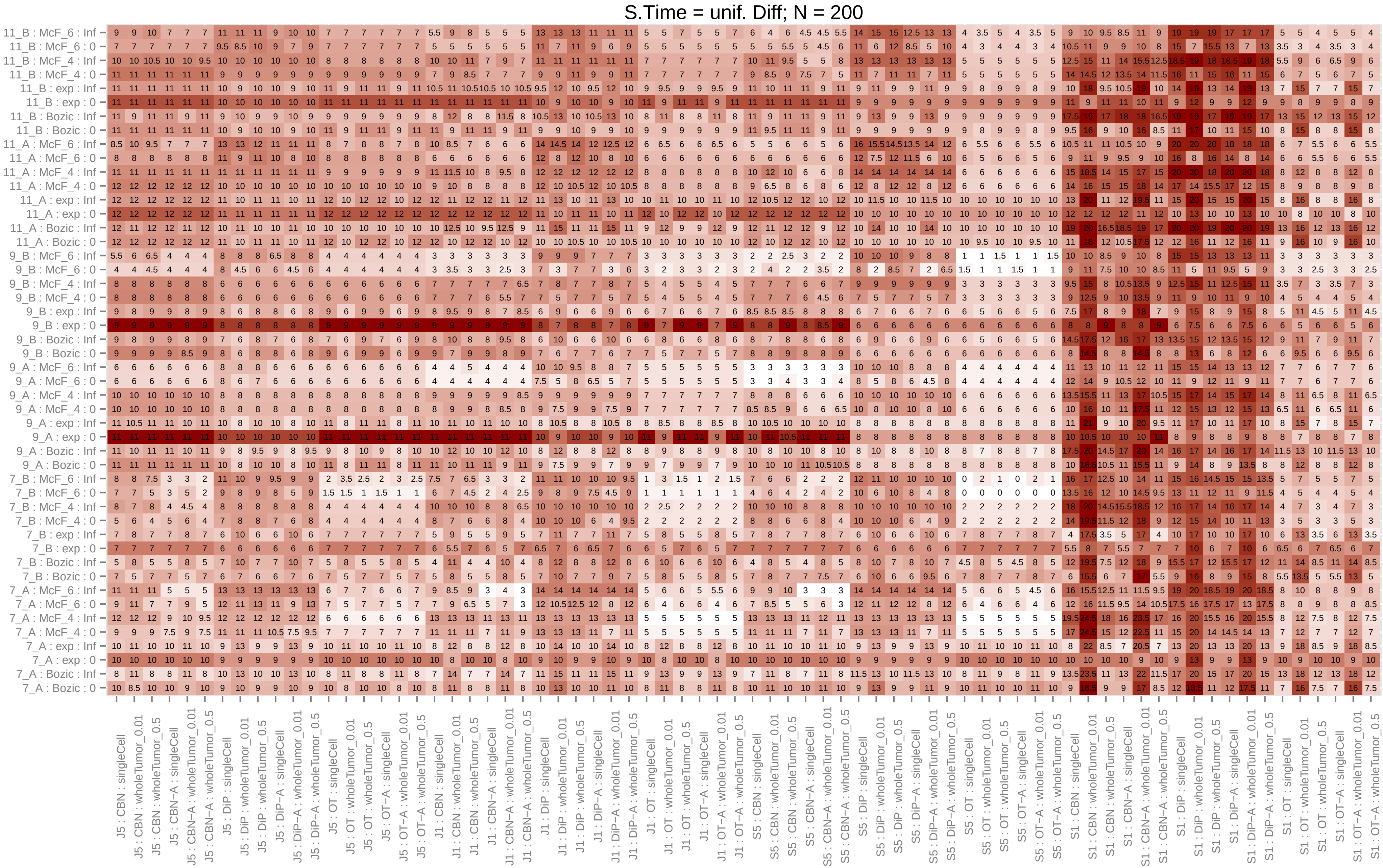
Supplementary Figure 53: Drivers Unknown, Diff, N = 1000, S.Time = last



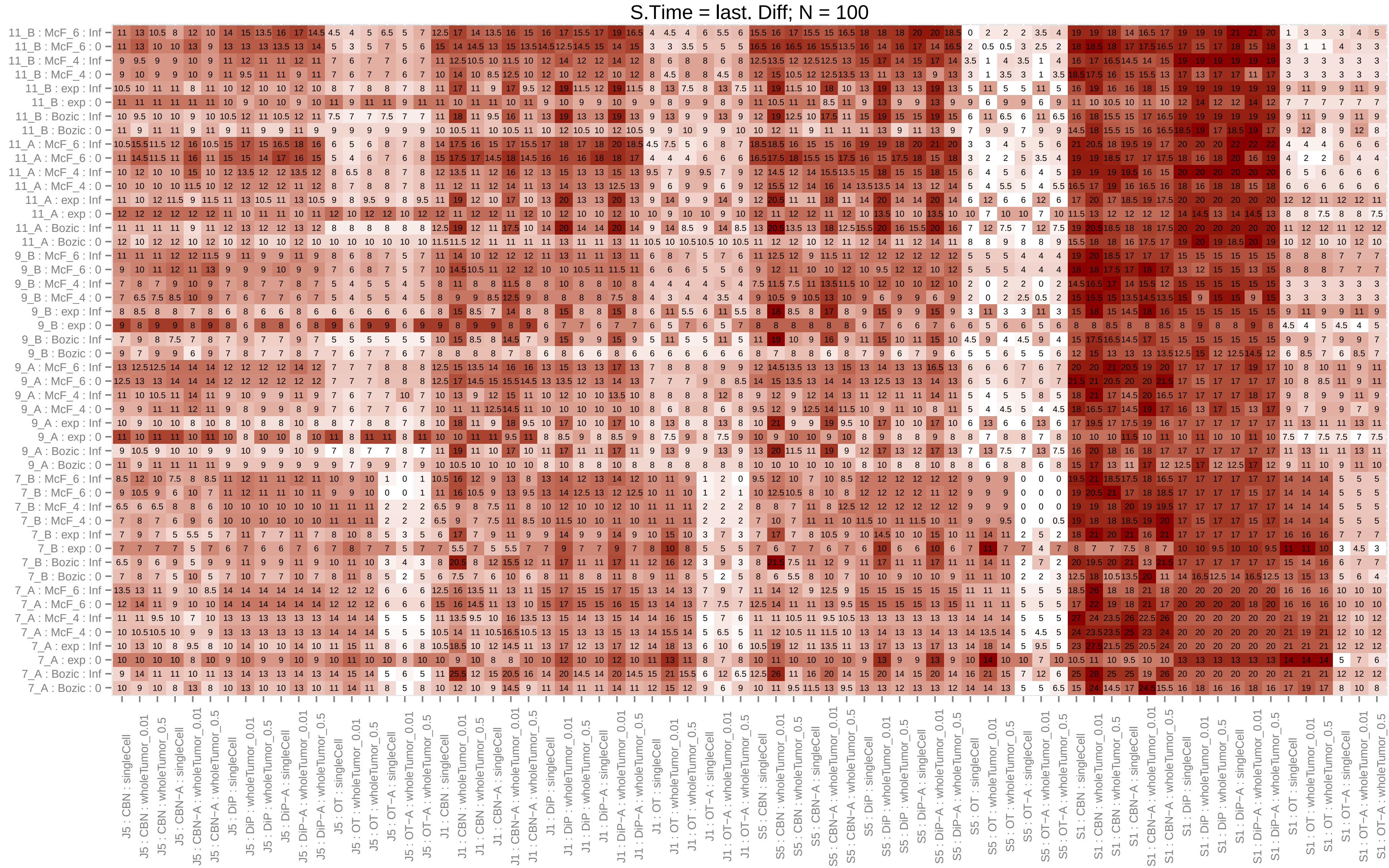
Supplementary Figure 54: Drivers Unknown, Diff, N = 1000, S.Time = unif.



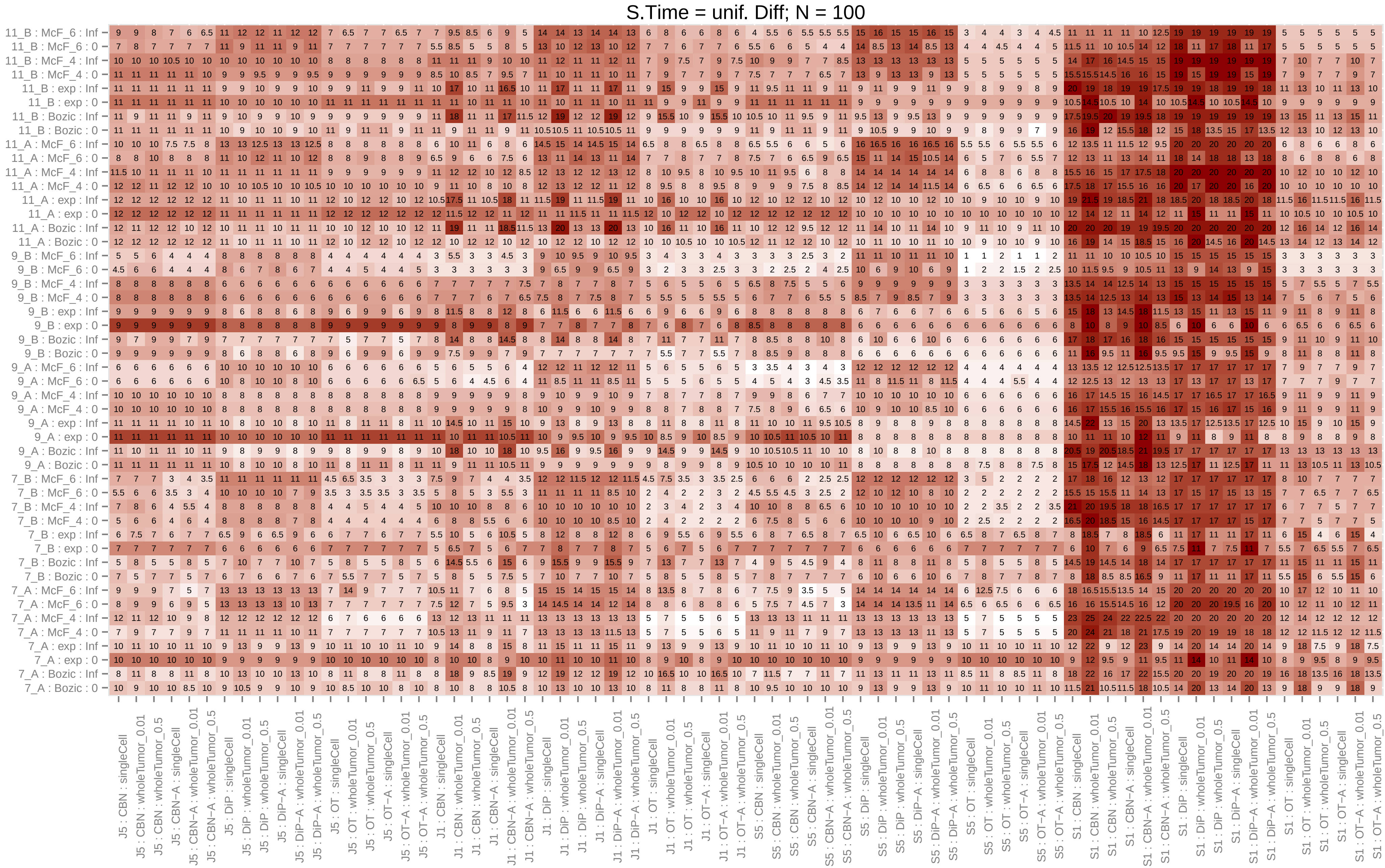
Supplementary Figure 55: Drivers Unknown, Diff, N = 200, S.Time = last



Supplementary Figure 56: Drivers Unknown, Diff, N = 200, S.Time = unif.

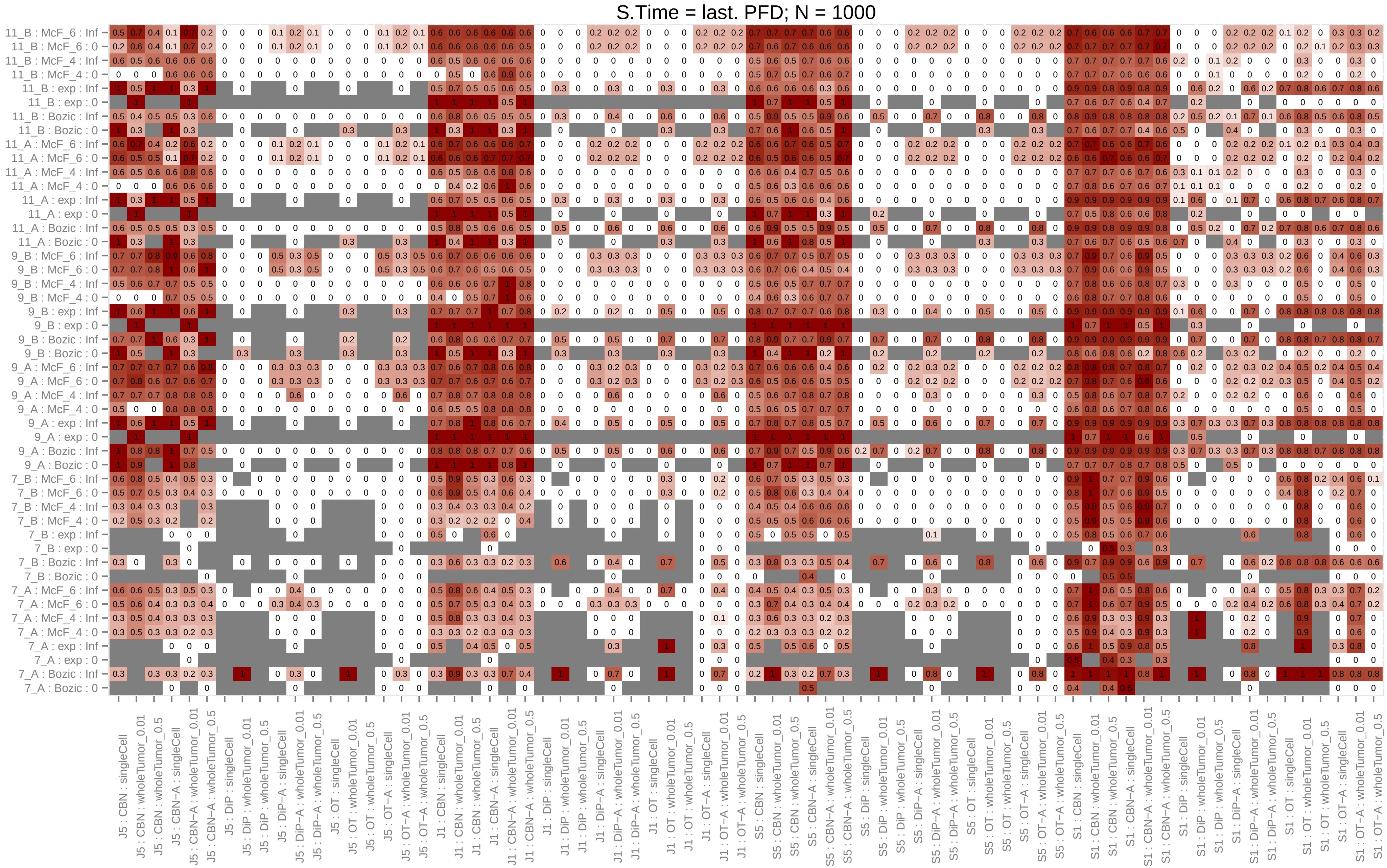


Supplementary Figure 57: Drivers Unknown, Diff, N = 100, S.Time = last

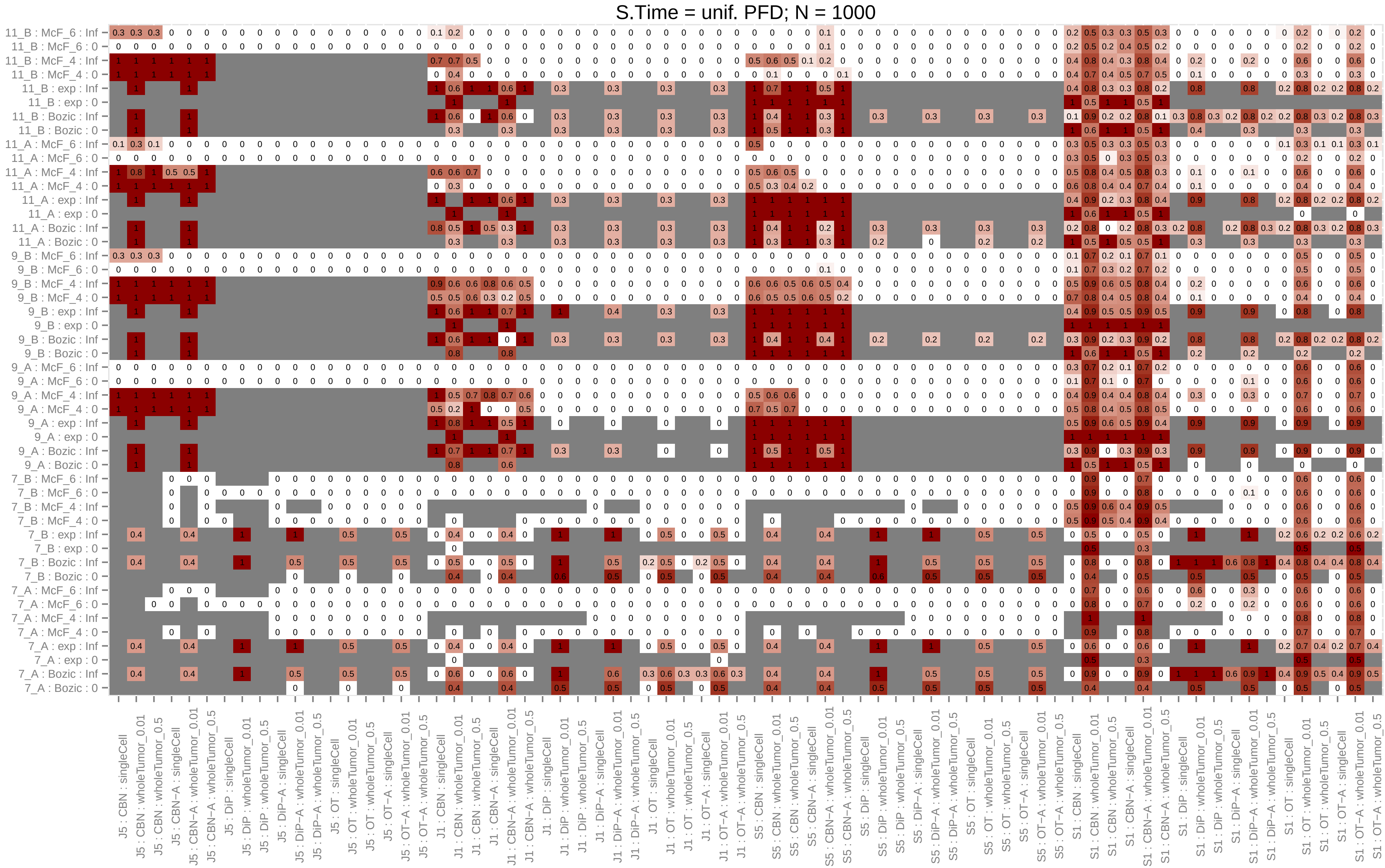


Supplementary Figure 58: Drivers Unknown, Diff, N = 100, S.Time = unif.

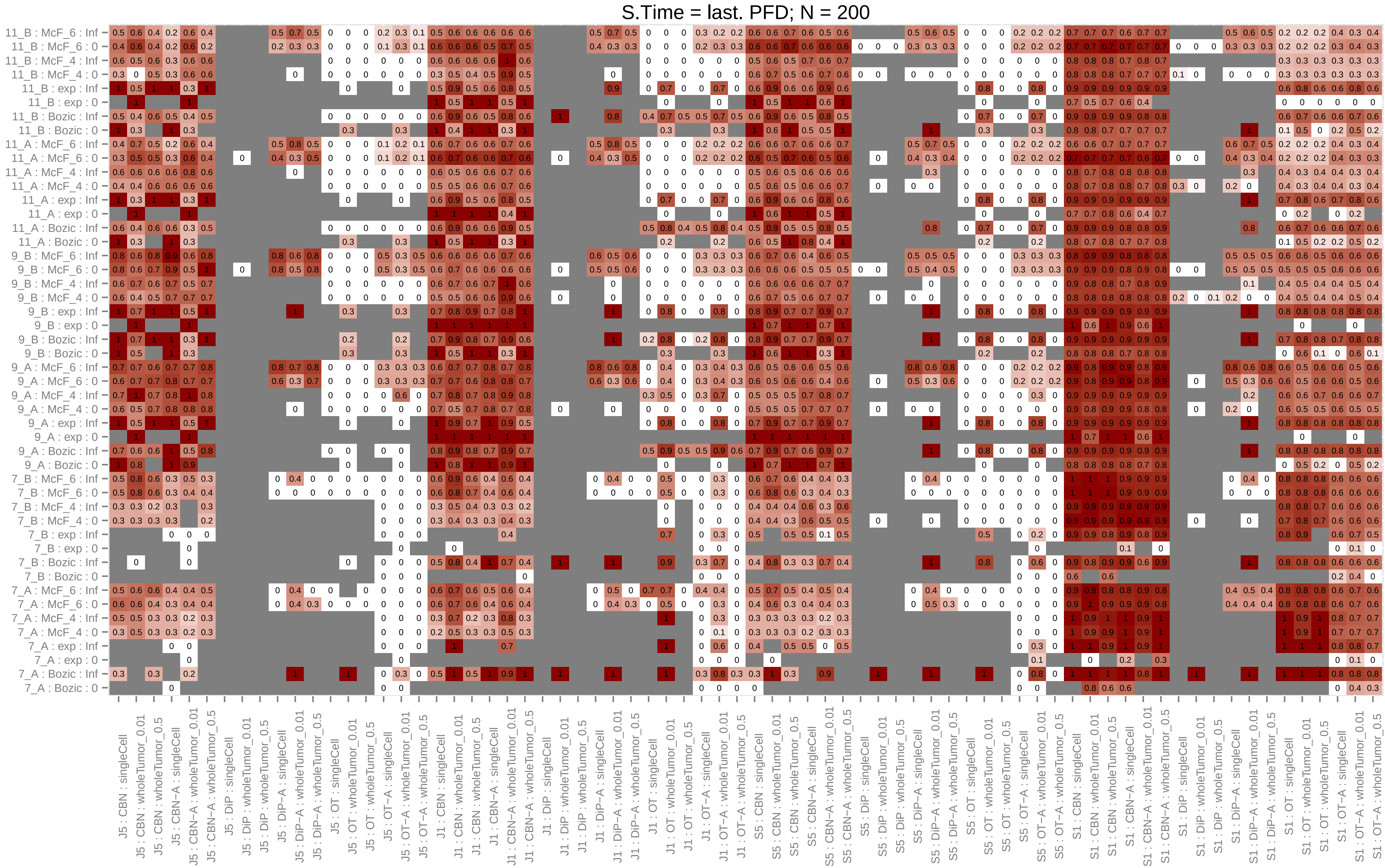
16.2.3 PFD, Drivers Unknown



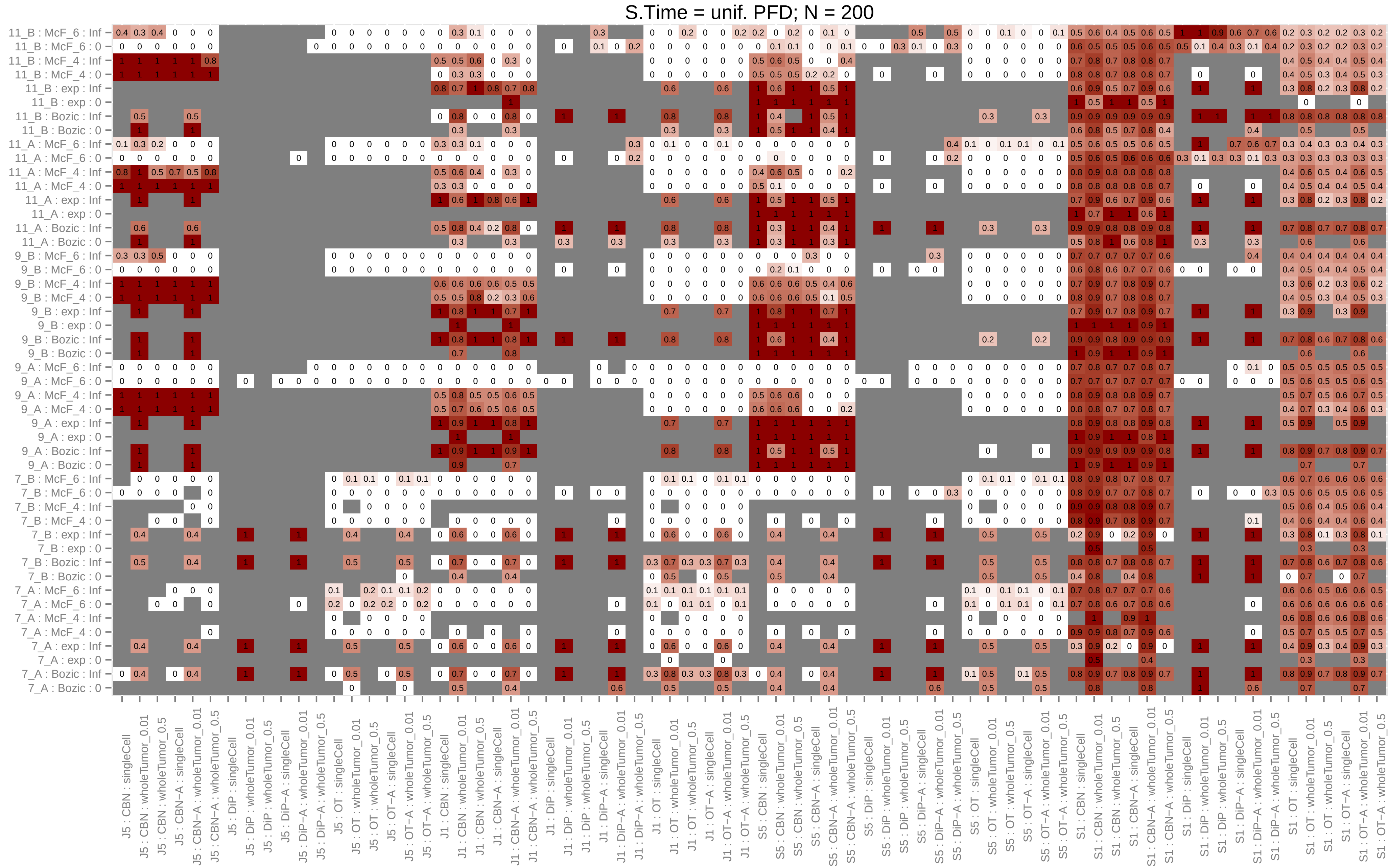
Supplementary Figure 59: Drivers Unknown, PFD, N = 1000, S.Time = last



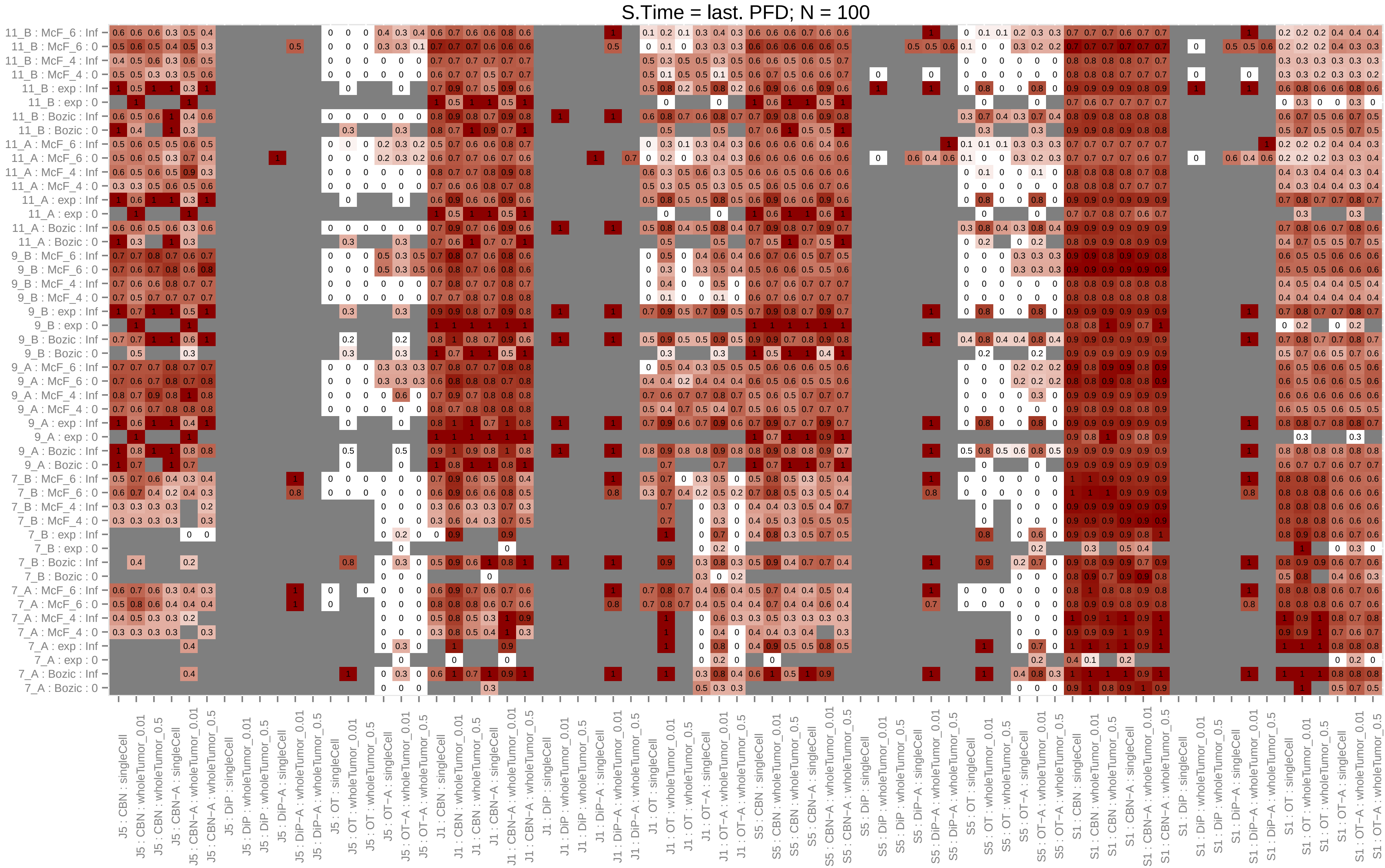
Supplementary Figure 60: Drivers Unknown, PFD, N = 1000, S.Time = unif.



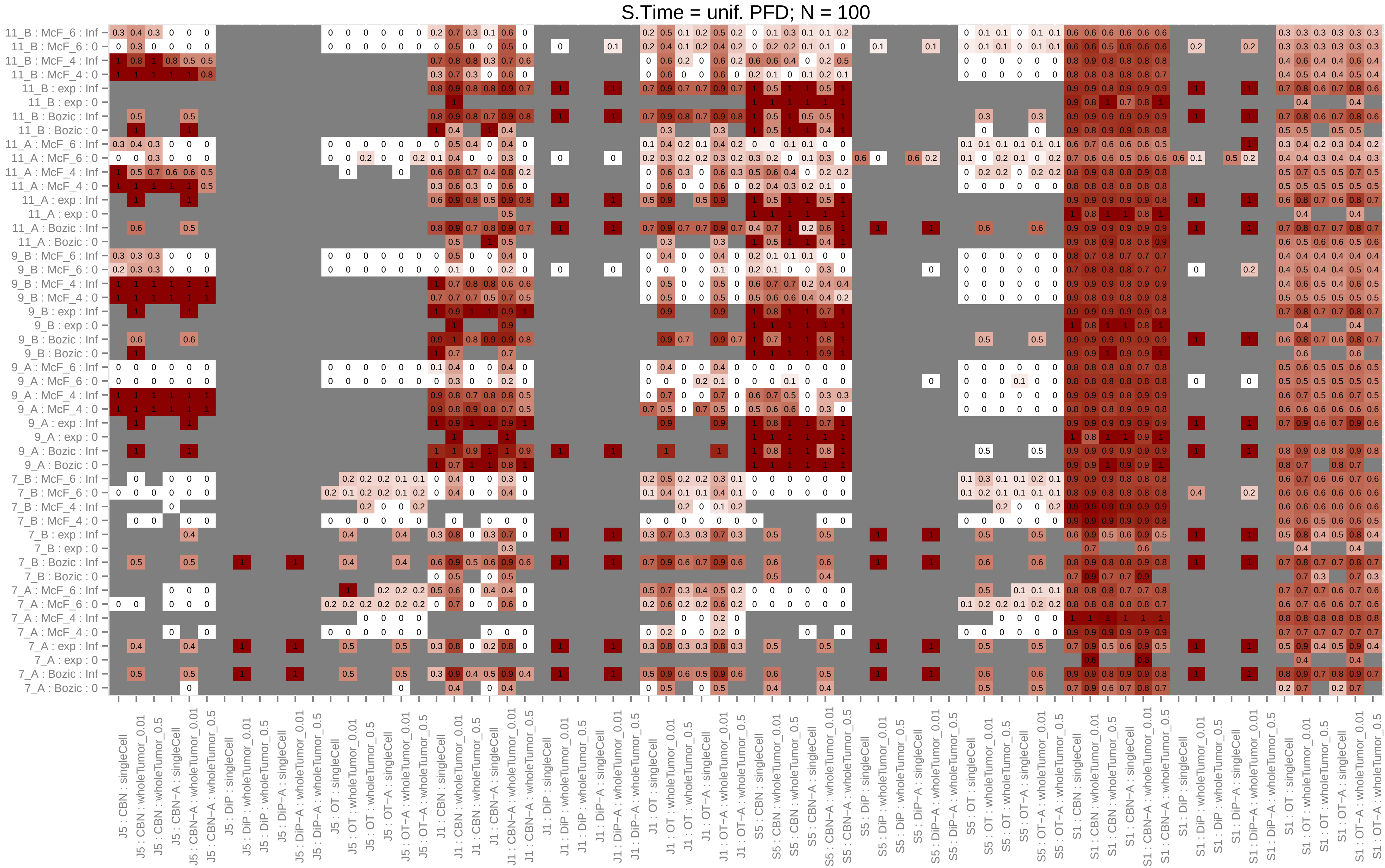
Supplementary Figure 61: Drivers Unknown, PFD, N = 200, S.Time = last



Supplementary Figure 62: Drivers Unknown, PFD, N = 200, S.Time = unif.

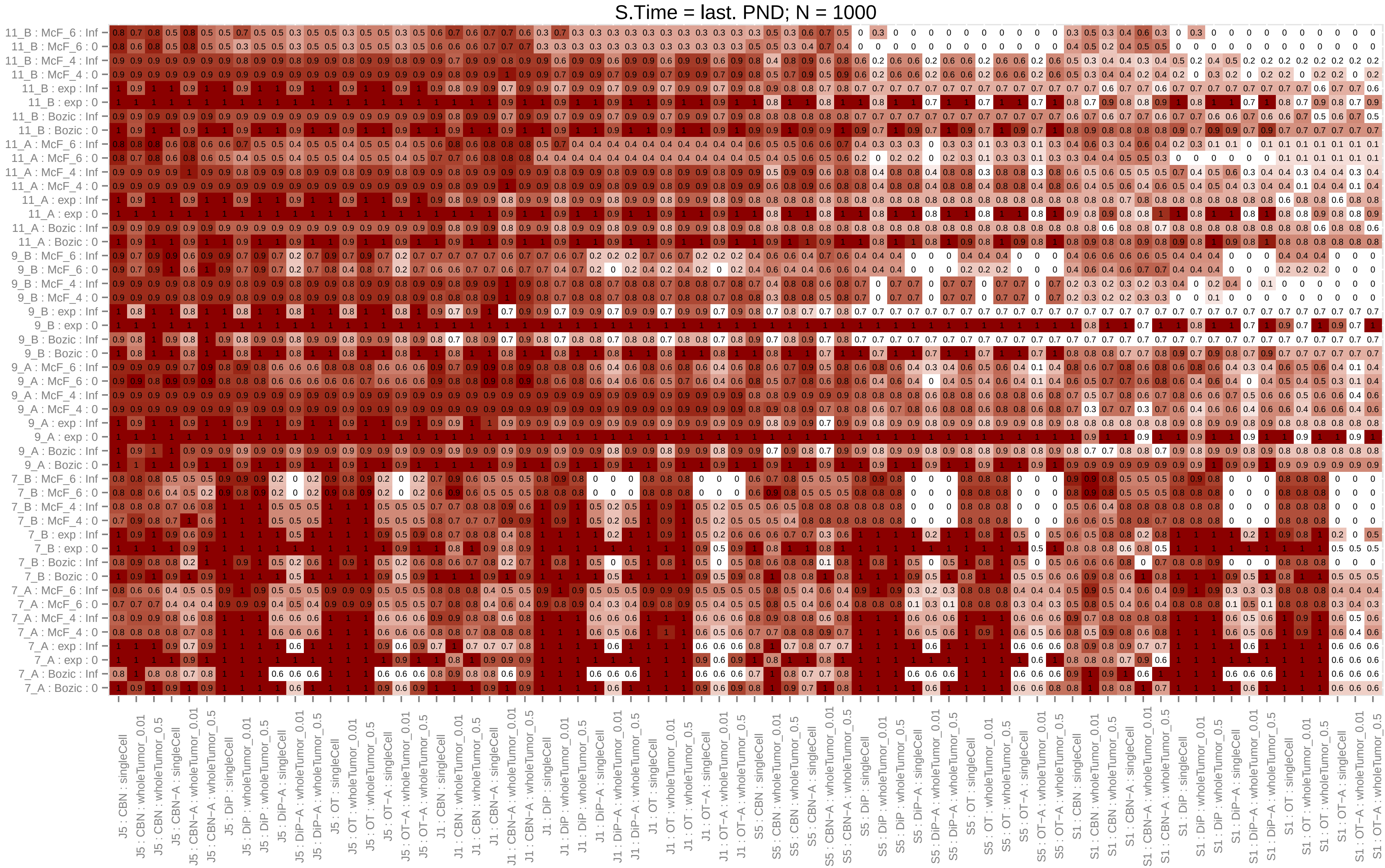


Supplementary Figure 63: Drivers Unknown, PFD, N = 100, S.Time = last

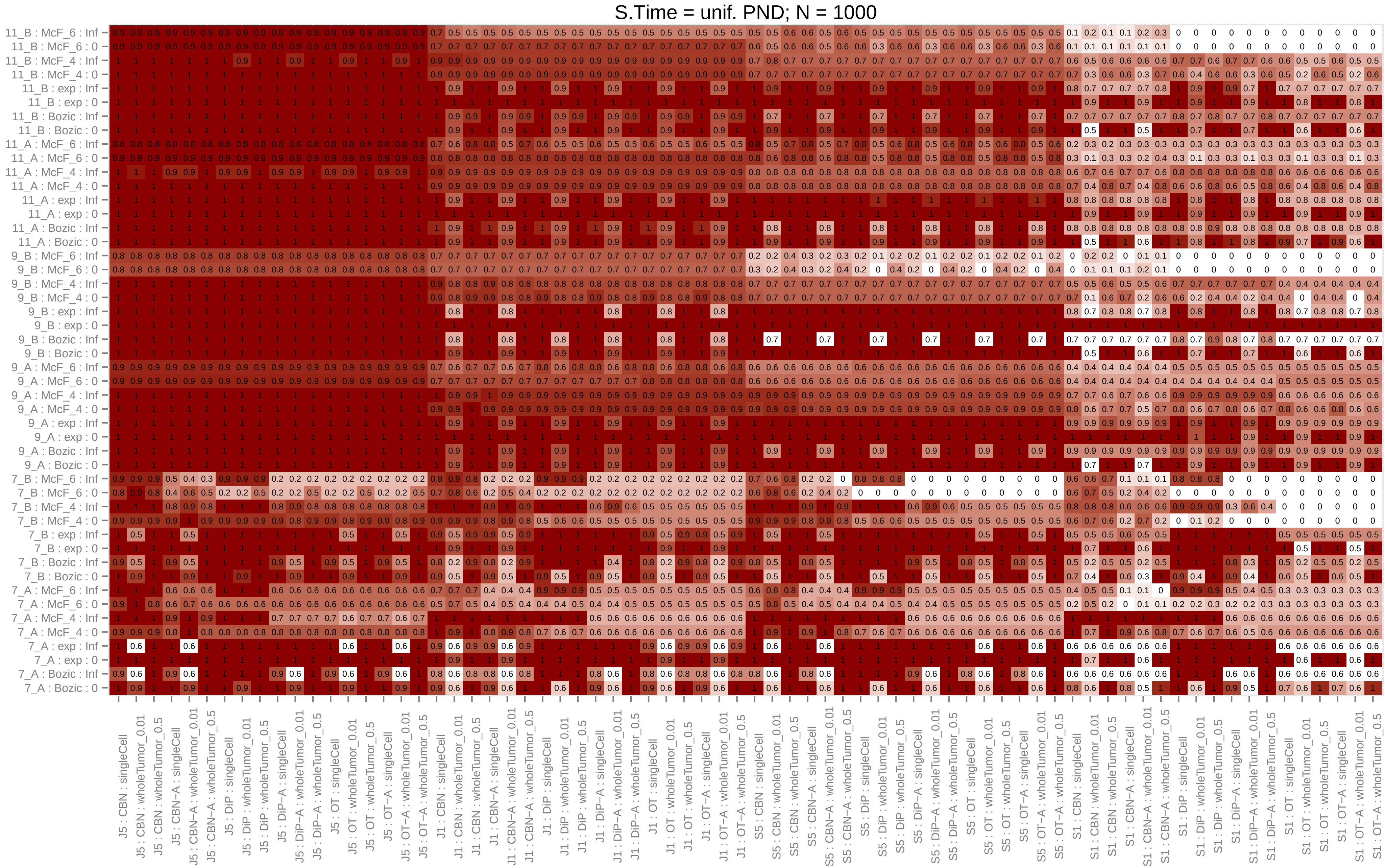


Supplementary Figure 64: Drivers Unknown, PFD, N = 100, S.Time = unif.

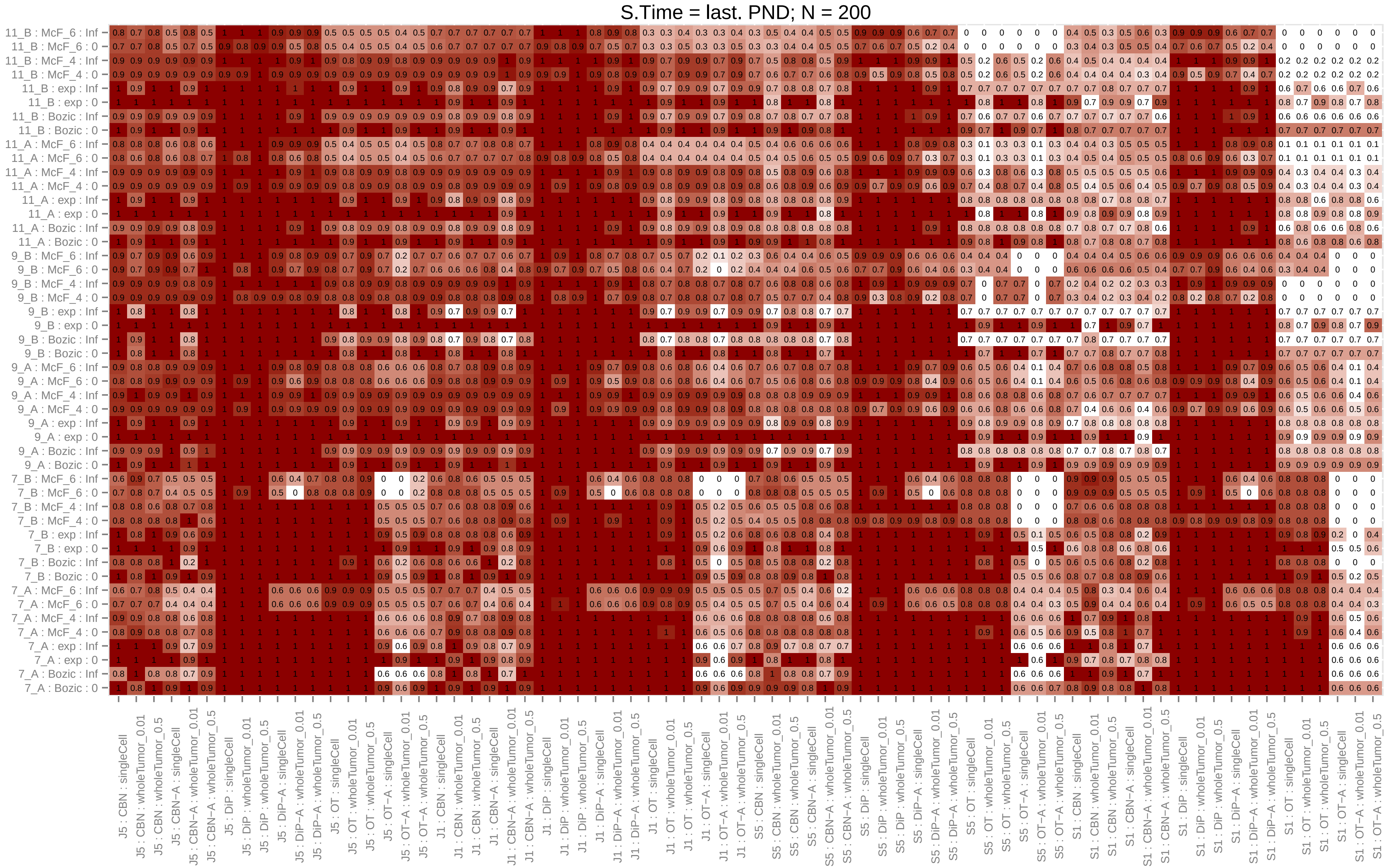
16.2.4 PND, Drivers Unknown



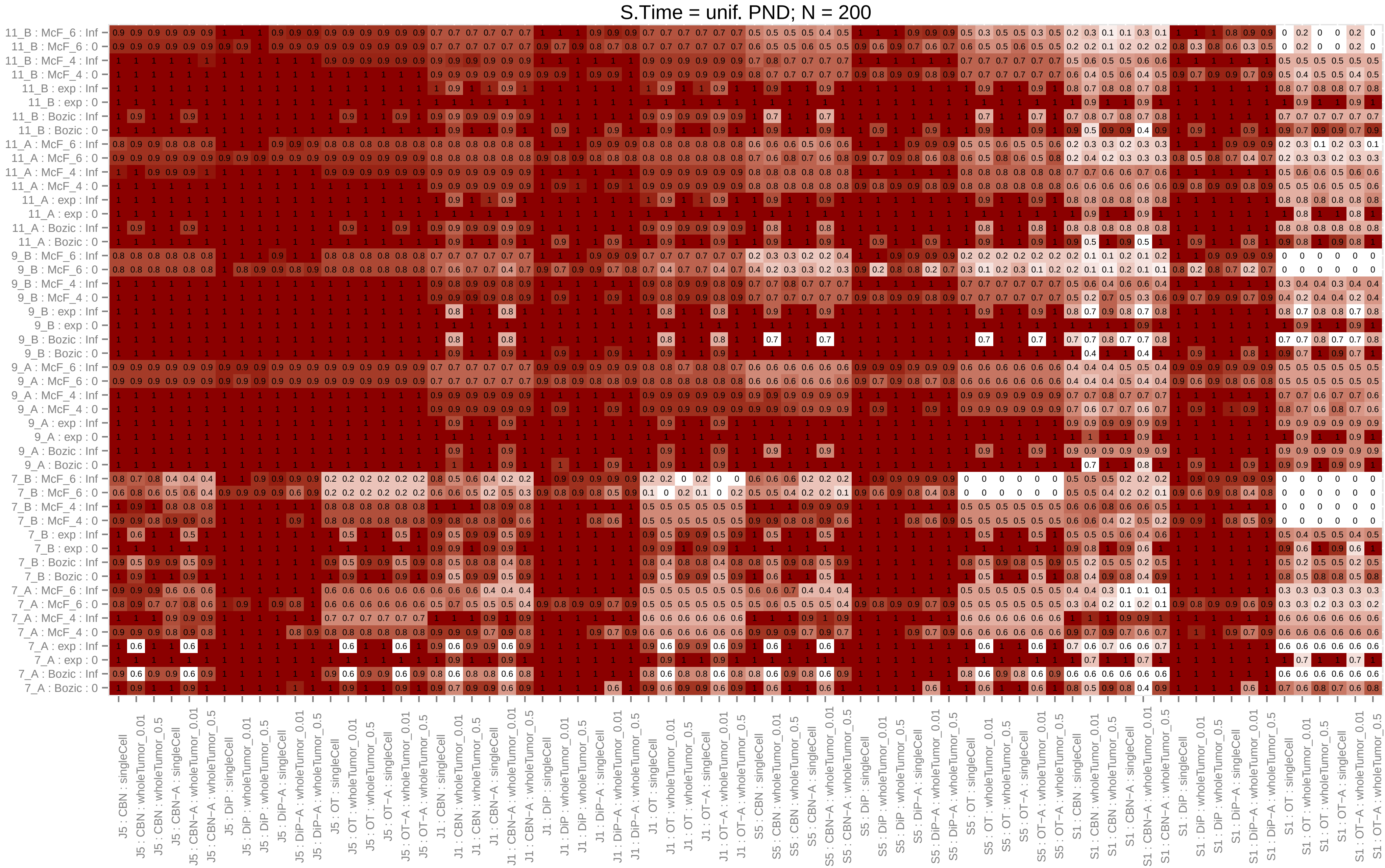
Supplementary Figure 65: Drivers Unknown, PND, N = 1000, S.Time = last



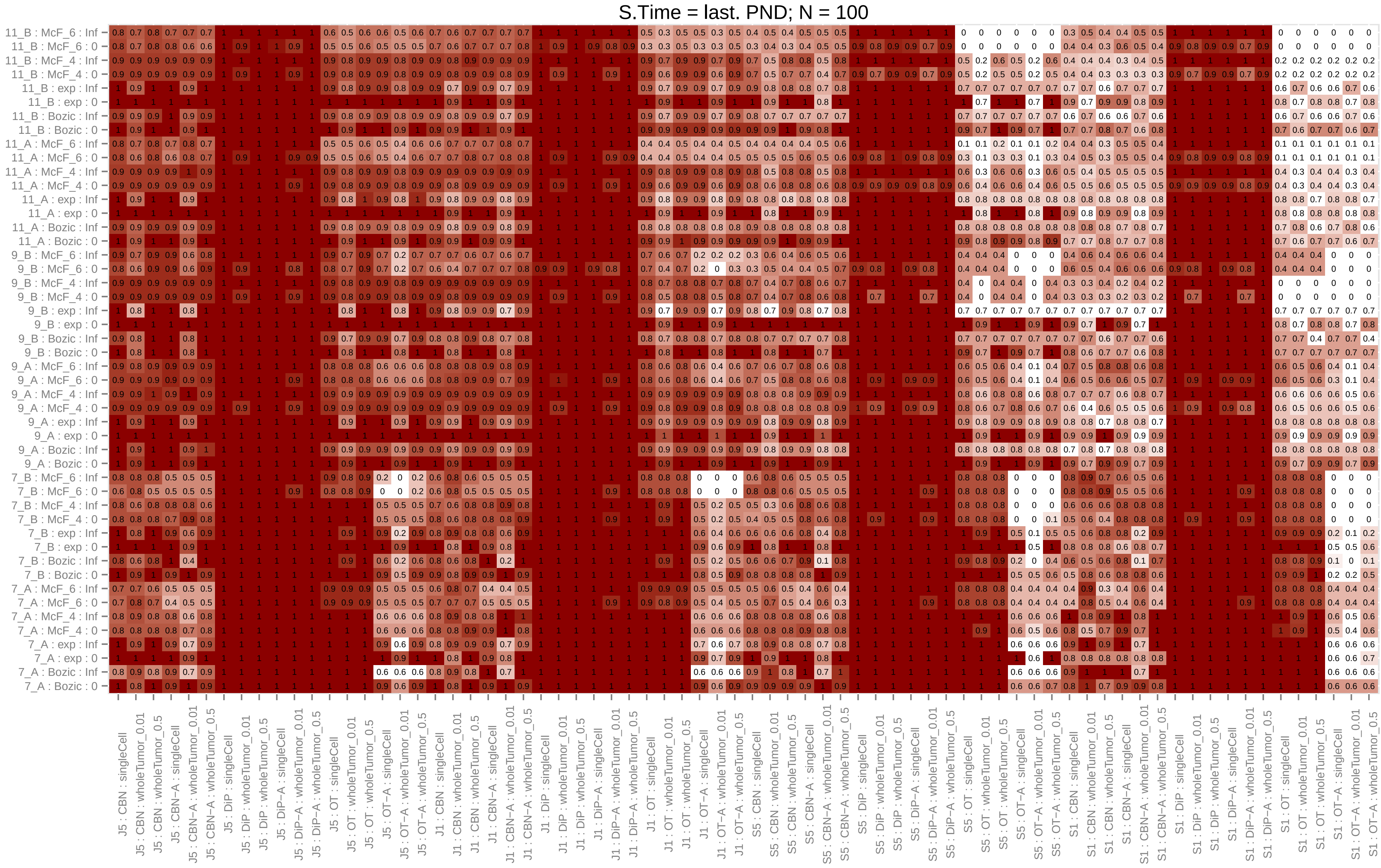
Supplementary Figure 66: Drivers Unknown, PND, N = 1000, S.Time = unif.



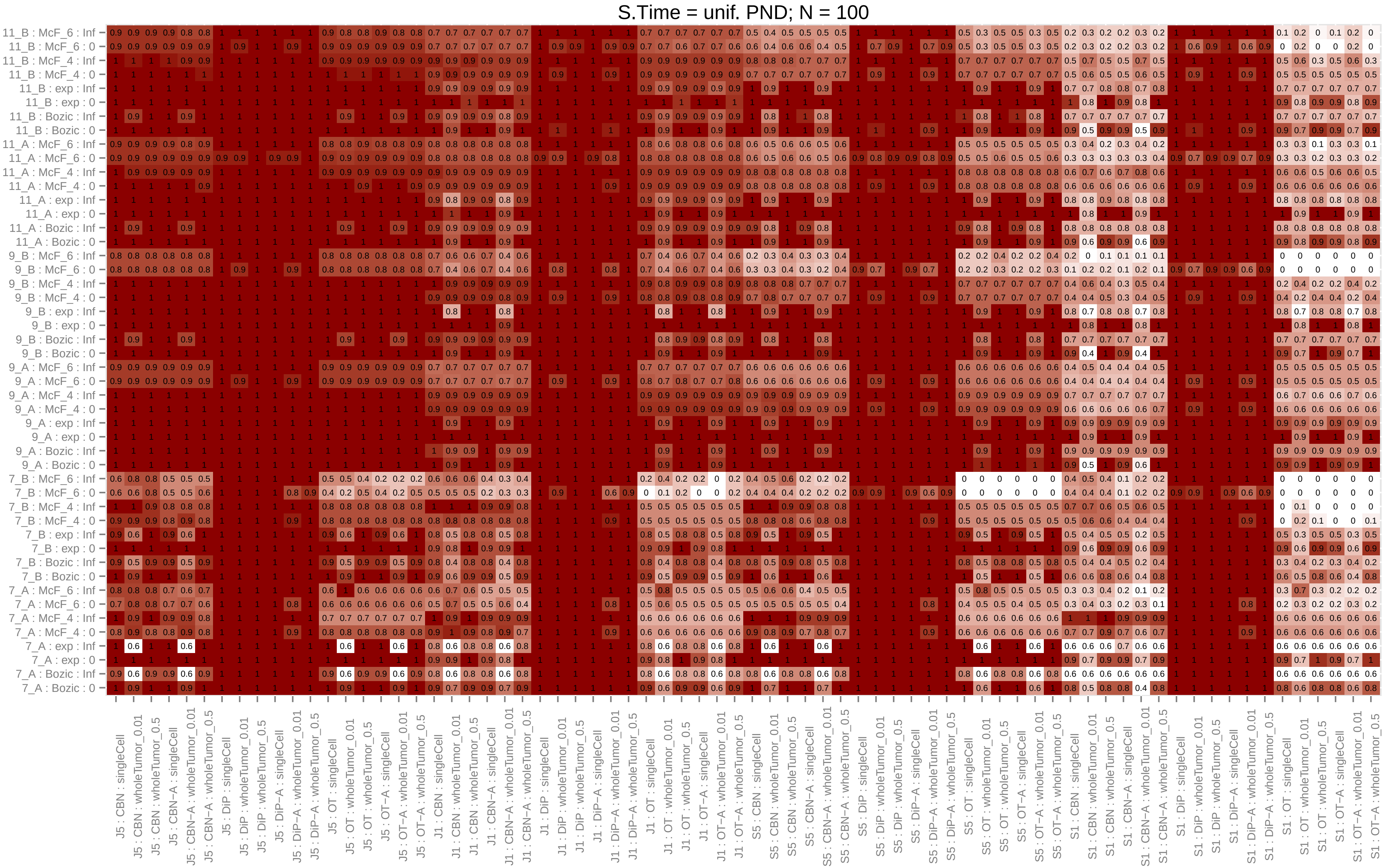
Supplementary Figure 67: Drivers Unknown, PND, N = 200, S.Time = last



Supplementary Figure 68: Drivers Unknown, PND, N = 200, S.Time = unif.

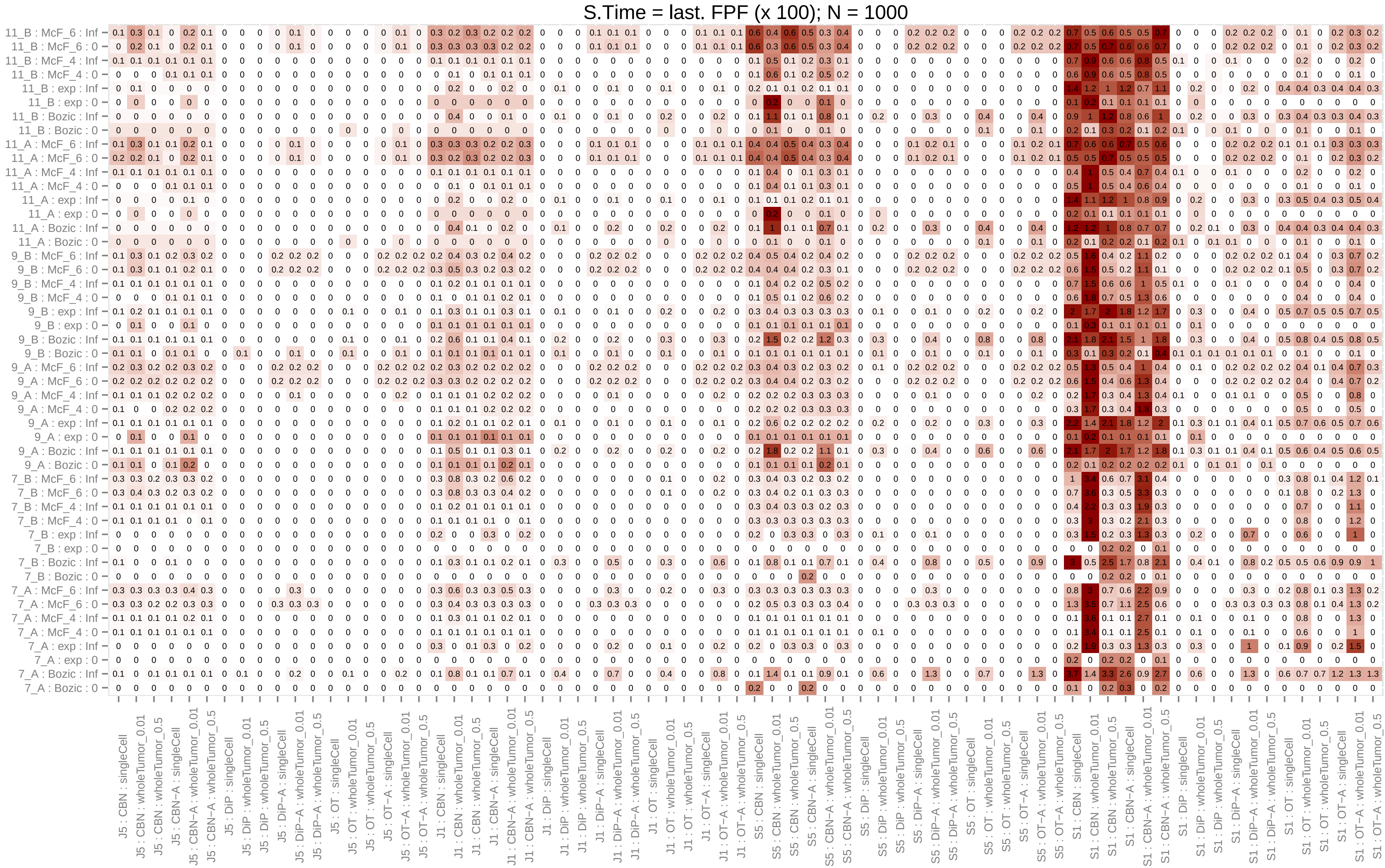


Supplementary Figure 69: Drivers Unknown, PND, N = 100, S.Time = last

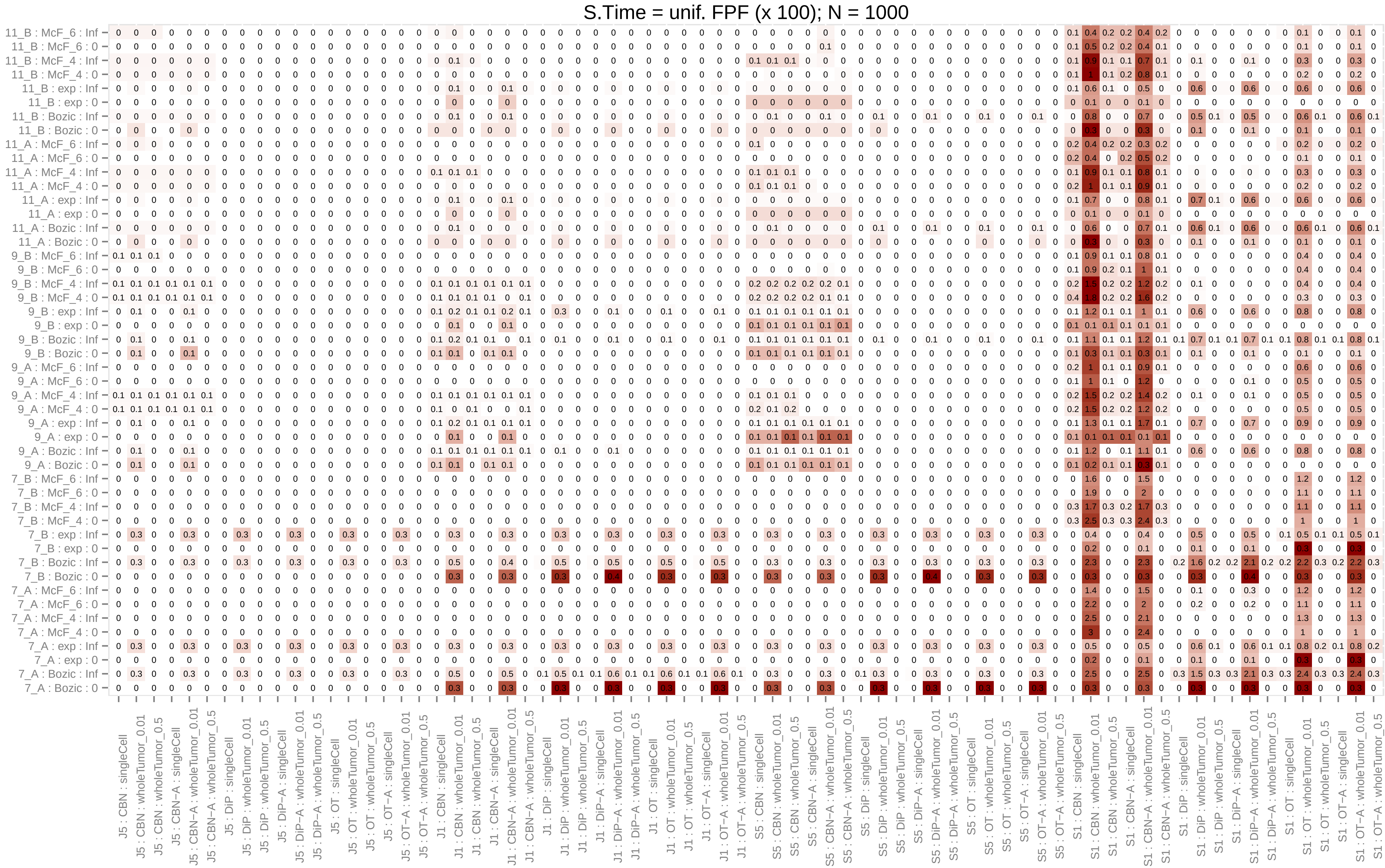


Supplementary Figure 70: Drivers Unknown, PND, N = 100, S.Time = unif.

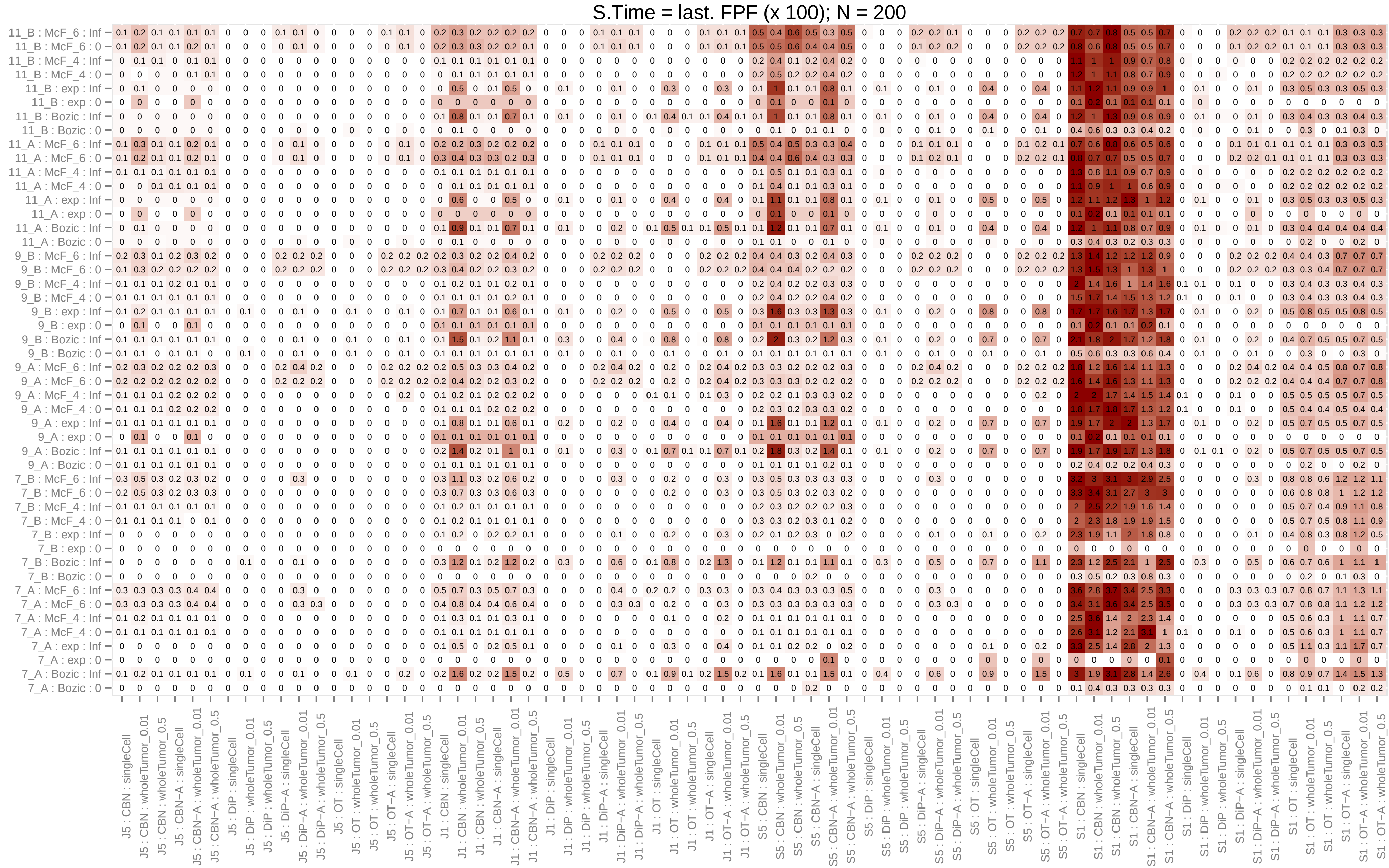
16.2.5 FPF, Drivers Unknown



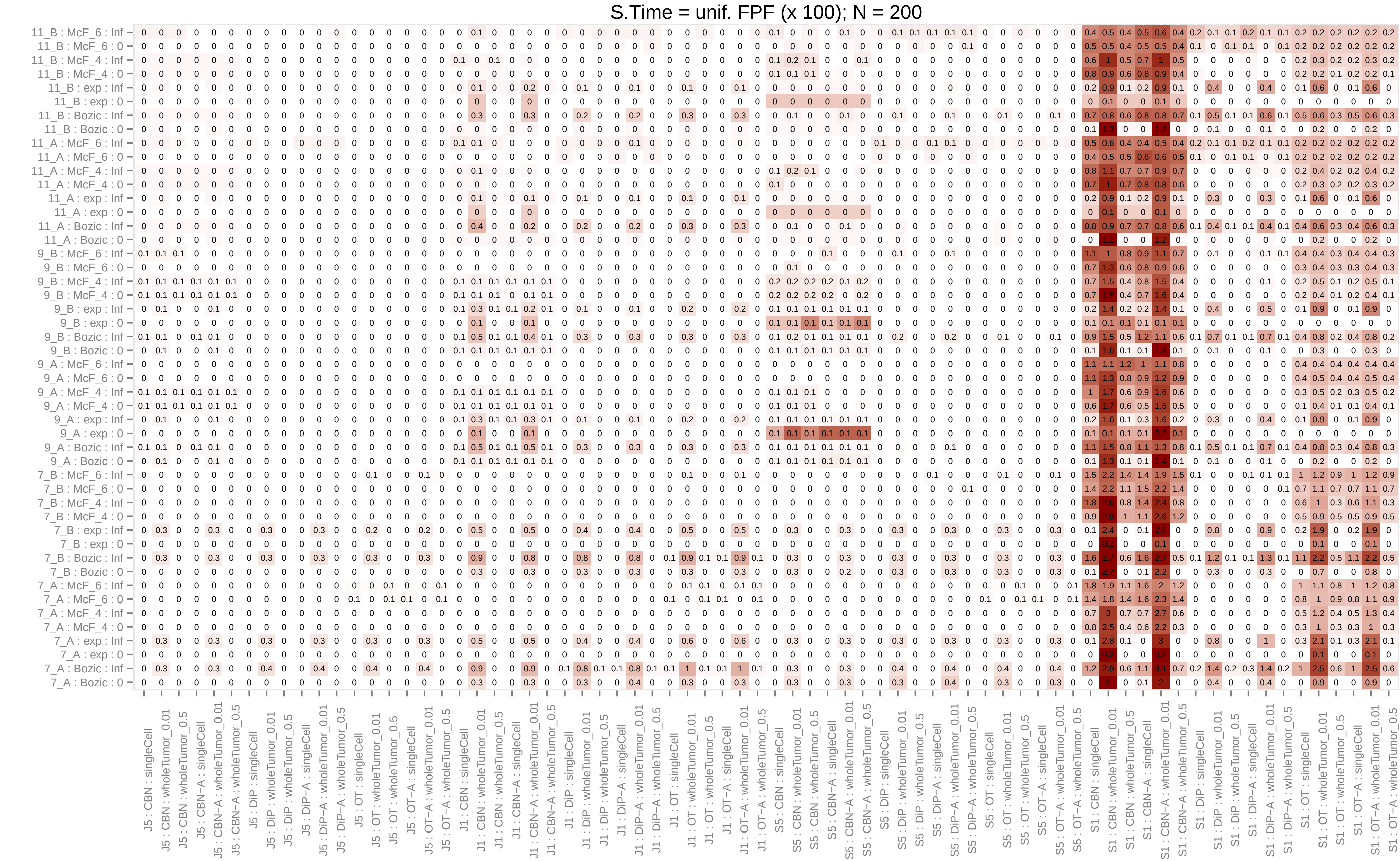
Supplementary Figure 71: Drivers Unknown, FPF, N = 1000, S.Time = last



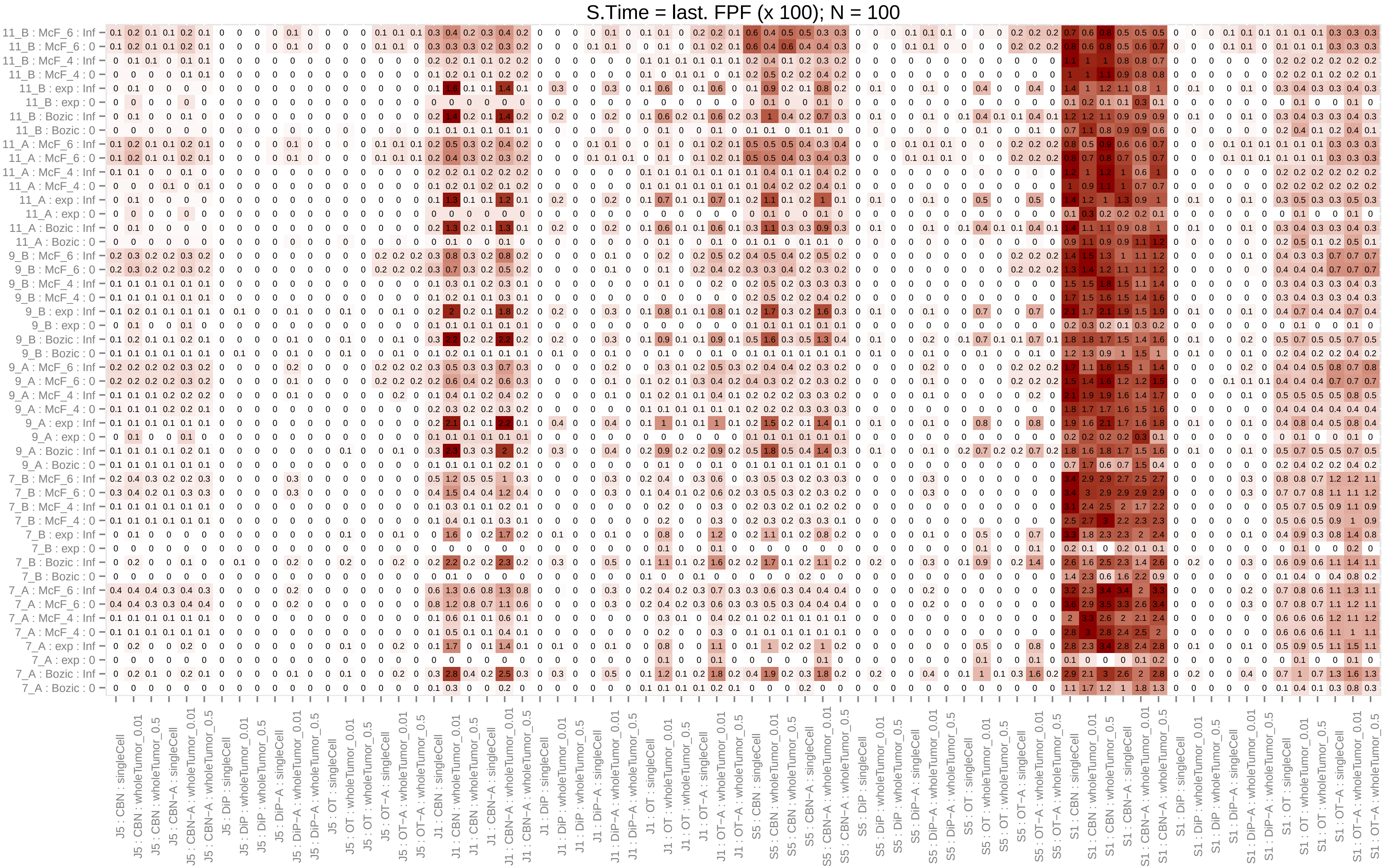
Supplementary Figure 72: Drivers Unknown, FPF, N = 1000, S.Time = unif.



Supplementary Figure 73: Drivers Unknown, FPF, N = 200, S.Time = last



Supplementary Figure 74: Drivers Unknown, FPF, N = 200, S.Time = unif.



Supplementary Figure 75: Drivers Unknown, FPF, N = 100, S.Time = last

Supplementary Figure 76: Drivers Unknown, FPF, N = 100, S.Time = unif.

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